



Cisco Transport Manager Release 8.0 Installation Guide

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Preface

New and Changed Information

The following table describes information that has been added or changed since the *Cisco Transport Manager Release 8.0 Installation Guide* was printed or last published online.

Table 1 *New and Changed Information in This Guide*

Date Released	Revision	Location
March 26, 2007	Initial version.	—
April 4, 2007	Added a procedure that explains how to use the SSH client from SSH Communications Security or Tectia with MGX NEs.	5.1.4 Enabling the SSH Remote Access CLI for MGX, page 5-4
April 30, 2007	Corrected a filename in Step 9 and Step 17 of the procedure to install Oracle9i on the CTM server workstation.	2.2.1 Installing Oracle9i on the CTM Server Workstation, page 2-18
	Corrected a filename in Step 9 of the procedure to download the 9.2.0.7 patch for Oracle9i on the CTM server workstation.	2.2.1.1 Downloading the 9.2.0.7 Patch for Oracle9i on the CTM Server Workstation, page 2-21
	Added this step when installing the 9.2.0.7 patch for Oracle9i: After the patch is installed, read the Oracle patch README.html file to carry out the post-installation steps and check any caveats associated with this patch.	Chapters 2 and 3, Installing the 9.2.0.7 Patch for Oracle9i
May 7, 2007	Added instructions for installing the 9.2.0.8 patch for Oracle9i.	Throughout
May 9, 2007	Revised the procedure for setting up the UNIX environment on the CTM server workstation.	2.2.1.6 Setting Up the UNIX Environment on the CTM Server Workstation, page 2-24
	Revised the procedure for installing the CTM R8.0 server on the CTM server workstation.	2.2.3 Installing the CTM R8.0 Server on the CTM Server Workstation, page 2-27
	Revised the procedure for installing the CTM R8.0 database.	2.2.7 Installing the CTM R8.0 Database, page 2-41
	Revised the procedure for verifying the Oracle9i client installation on the CTM server workstation.	2.2.8 Verifying the Oracle9i Client Installation on the CTM Server Workstation and Starting the CTM Server, page 2-43

Table 1 *New and Changed Information in This Guide (continued)*

Date Released	Revision	Location
May 17, 2007	Changed the part number of this guide from 78-17620-01 to 78-17620-02.	—
June 13, 2007	Removed this text: The disk space values are for new installations of CTM R8.0 only. If you are migrating from a previous release, you will need this amount of disk space in addition to the disk space used by the previous release. The partition sizes are for new installations of CTM R8.0 only. If you are migrating from a previous release, each partition will require this amount of disk space in addition to the size of the partitions used by the previous release.	Chapter 1, “System Requirements”
June 29, 2007	Corrected the commands to install 64-bit Oracle Standard or Enterprise Edition and 9.2.0.8.	2.2.1 Installing Oracle9i on the CTM Server Workstation, page 2-18
July 30, 2007	Corrected the command to install the response file with the -silent option.	2.1.1.4 Installing the 9.2.0.7 Patch for Oracle9i, page 2-8 2.2.5.2 Installing Oracle9i on the CTM Database Workstation, page 2-33 2.2.5.4 Installing the 9.2.0.7 Patch for Oracle9i on the CTM Database Workstation, page 2-36 2.2.5.6 Installing the 9.2.0.8 Patch for Oracle9i on the CTM Database Workstation, page 2-37

Table 1 ***New and Changed Information in This Guide (continued)***

Date Released	Revision	Location
January 28, 2008	Reworded Step 2.	2.1.1.1 Setting the Environment for Installation, page 2-2
	Revised the patch installation procedures detailed in Chapter 2, “Installing the CTM R8.0 Server and Oracle9i.”	2.1.1.4 Installing the 9.2.0.7 Patch for Oracle9i, page 2-8 2.1.1.6 Installing the 9.2.0.8 Patch for Oracle9i, page 2-9 2.2.1.2 Installing the 9.2.0.7 Patch for Oracle9i on the CTM Server Workstation, page 2-21 2.2.1.4 Installing the 9.2.0.8 Patch for Oracle9i on the CTM Server Workstation, page 2-23 2.2.5.4 Installing the 9.2.0.7 Patch for Oracle9i on the CTM Database Workstation, page 2-36 2.2.5.6 Installing the 9.2.0.8 Patch for Oracle9i on the CTM Database Workstation, page 2-37
	Revised the upgrade procedures detailed in Chapter 3, “Upgrading to CTM R8.0 from an Earlier Release.”	3.1.5 Installing the 9.2.0.7 Patch for Oracle9i, page 3-4 3.1.8 Installing the 9.2.0.8 Patch for Oracle9i, page 3-7 3.2.5 Installing the 9.2.0.7 Patch for Oracle9i, page 3-18 3.2.8 Installing the 9.2.0.8 Patch for Oracle9i, page 3-20
February 28, 2008	Replaced all instances of http://www.cisco.com/pcgi-bin/tablebuild.pl/ctm and http://www.cisco.com/cgi-bin/tablebuild.pl/ctm with http://tools.cisco.com/support/downloads/pub/Redirect.x?mdf_id=278875317 .	Chapter 2, “Installing the CTM R8.0 Server and Oracle9i” Chapter 3, “Upgrading to CTM R8.0 from an Earlier Release”

Table 1 *New and Changed Information in This Guide (continued)*

Date Released	Revision	Location
April 29, 2008	Modified the values detailed for the high-end configuration in Table 1-5 . Changed 329 GB to 234 GB (without PM collection) and changed 951 GB to 856 GB (with PM collection).	Chapter 1, “System Requirements”
	Modified the swap space required in a high-end setup. Changed 196 GB to 96 GB in Table 1-9 and Table 1-10, Part 1 .	
June 6, 2008	Updated the procedures detailed in Chapter 3, “Upgrading to CTM R8.0 from an Earlier Release.”	3.1.9 Post-Installation Steps for 9.2.0.7 or 9.2.0.8—When Upgrading Your CTM Server Installation, page 3-8 3.2.2 Solaris Migration from Sun Solaris 8 to Sun Solaris 10, page 3-16 3.2.9 Post-Installation Steps for 9.2.0.7 or 9.2.0.8—When Upgrading Your CTM Server Installation, page 3-21
	Added steps to install the latest CTM R7.2 service pack and to run the pre- and postmigration scripts.	
July 2, 2008	Corrected the disk space requirements for small, medium, and large networks.	Table 1-5
	For disk space requirements, added that the disk space shown does not include the /ctm_backup directory.	1.1.2 Disk Space Specifications, page 1-6
September 2, 2008	Added steps to install the latest CTM R7.0 service pack and to run the pre- and postmigration scripts.	3.1.11 Installing the CTM R8.0 Server and Upgrading the Database, page 3-10 3.2.11 Installing the CTM R8.0 Server and Upgrading the Database, page 3-23 3.2.12 Upgrading the Database on the CTM Database Workstation, page 3-28

Introduction

This guide explains how to install Cisco Transport Manager (CTM) Release 8.0 and how to upgrade from previous releases.

CTM is an advanced management system that provides functionality at the element and network management levels for Cisco optical network elements (NEs), routers, and switches. CTM supports fault, configuration, performance, and security management functional areas. CTM also serves as a foundation for integration into a larger overall Operations Support System (OSS) environment by providing northbound gateway interfaces to higher-layer management systems.

In Release 8.0, CTM supports the Cisco 7600 Series Edge Router (Cisco 7600); the Cisco Optical Networking System (ONS) family of optical NEs; the Cisco Catalyst 6509; the Cisco Carrier Routing System 1 (CRS-1); the Cisco XR 12000; the Cisco MGX 8880 Voice Gateway and MGX 8850/8830 Voice-Enabled Multiservice Switch; and the Cisco MDS 9000 Multilayer Director and Fabric Switch.

**Note**

See the [Release Notes for Cisco Transport Manager Release 8.0](http://www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_release_notes_list.html) for the NE software versions that are supported in CTM R8.0. The CTM release notes are available on the product CD and online at http://www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_release_notes_list.html.

**Caution**

Before updating the software image on an NE, check the CTM release notes to verify whether the NE software version is supported in this CTM release.

Audience

The primary audience for this guide includes network operations personnel and system administrators. This guide assumes that you are familiar with the following products and topics:

- Basic internetworking terminology and concepts
- Network topology and protocols
- Microsoft Windows 2000 Professional, Windows XP Professional, and Windows Server 2003 Terminal Server
- Sun Microsystems Solaris administration
- Oracle database administration

Conventions

This document uses the conventions listed in the following table.

Table 2 **Document Conventions**

Item	Convention
Commands and keywords	boldface font
Variables for which you supply values	<i>italic</i> font
Displayed session and system information	screen font
Information you enter	boldface screen font
Variables you enter	<i>italic_screen</i> font
Menu items and button names	boldface font
Selecting a menu item	Option > Network Preferences

**Note**

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

**Caution**

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

**Tip**

Means the following information will help you solve a problem.

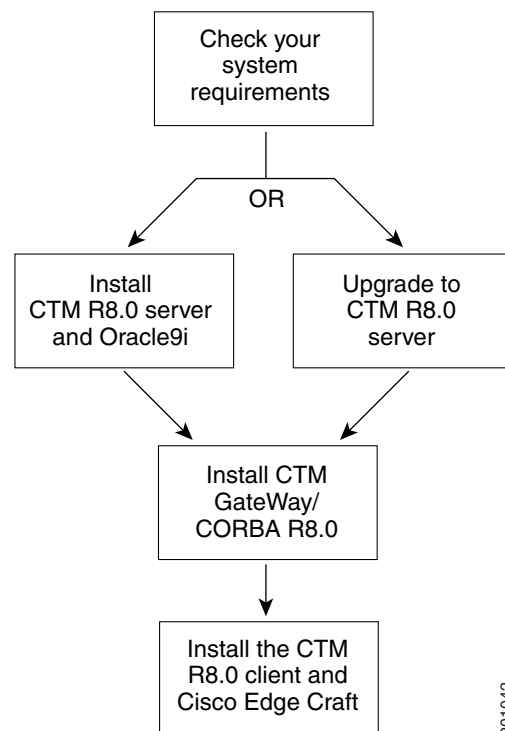
**Timesaver**

Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Installation and Upgrade Overview

The following figure describes the typical CTM installation and upgrade workflow and the various components that can be installed in addition to CTM.

Figure 1 *CTM Installation and Upgrade Workflow*



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1. Check your system requirements before installing CTM R8.0 or upgrading from an earlier release. See [Chapter 1, “System Requirements.”](#)
2. For a new CTM R8.0 server installation, see [Table 3 on page xv](#) and [Chapter 2, “Installing the CTM R8.0 Server and Oracle9i.”](#)

3. When upgrading to the CTM R8.0 server from an earlier installation, see [Table 3 on page xv](#) and [Chapter 3, “Upgrading to CTM R8.0 from an Earlier Release.”](#)
4. To install CTM GateWay/CORBA, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#) The CTM GateWay/CORBA option is a CORBA-based interface that provides higher-layer management systems with information for all supported NEs. You can install CTM GateWay/CORBA when you install the CTM server or you can install it separately after the CTM server installation.



Note You must purchase a separate license for CTM GateWay/CORBA R8.0.

5. To install the CTM R8.0 client and Cisco Edge Craft (optional), see [Chapter 5, “Installing the CTM R8.0 Client and Cisco Edge Craft.”](#) Cisco Edge Craft is the local craft application used to manage ONS 15302 and ONS 15305 NEs. You can install the CTM client manually or automatically. Cisco Edge Craft cannot be upgraded automatically even though it is bundled with the CTM client.

Installation and Upgrade Scenarios

The following table describes the different installation scenarios for CTM R8.0, and where information on these scenarios can be found. Based on your requirements and on your existing installation, choose one of the scenarios listed.

Table 3 *Installation and Upgrade Scenarios*

What is your existing release?	Will you install the CTM R8.0 server and Oracle9i database on separate workstations?	For more information, see
New installation	No	Page 2-1
New installation	Yes	Page 2-17
CTM R7.2	No	Page 3-2
CTM R7.2	Yes	Page 3-16
CTM R7.0	No	Page 3-2
CTM R7.0	Yes	Page 3-16

Related Documentation



Note

You can access the most current CTM R8.0 documentation online at http://www.cisco.com/en/US/products/sw/opticsw/ps2204/tsd_products_support_series_home.html.

The CTM documentation set comprises the following guides:

1. [Release Notes for Cisco Transport Manager Release 8.0](#)—Describes the caveats for CTM.
2. [Cisco Transport Manager Release 8.0 Installation Guide](#)—This guide.
3. [Cisco Transport Manager Release 8.0 User Guide](#)—Describes how to use the CTM software, which consists of user applications and tools for network discovery, network configuration, connection management, fault management, system administration, and security management.

4. *Cisco Transport Manager Release 8.0 GateWay/CORBA User Guide and Programmer Manual*—Describes the CTM GateWay/CORBA northbound interface product that is available for CTM. This document serves as a reference for developers of OSS applications that work with the CTM GateWay/CORBA interface.
5. *Cisco Transport Manager Release 8.0 Database Schema*—Describes the database schema that CTM uses to store information in a Structured Query Language (SQL) database such as the Oracle database. The document is designed for users who need to create their own reports without using CTM.
6. *Cisco Transport Manager Release 8.0 High Availability Installation Guide*—Explains how to install CTM in a high availability (HA) environment.



Note The *Cisco Transport Manager Release 8.0 High Availability Installation Guide* is not available online. Contact your Cisco account representative to obtain this guide.

7. *Cisco Transport Manager Release 8.0 ML Provisioning Methodology*—Describes the methodology that CTM uses to provision ML-series cards.

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.



CHAPTER 1

System Requirements

This chapter describes what is required to install CTM. It contains the following sections:

- [1.1 CTM Server Requirements, page 1-1](#)
- [1.2 CTM Client Requirements, page 1-11](#)
- [1.3 Oracle Licensing for CTM, page 1-15](#)
- [1.4 Installation Prerequisites, page 1-18](#)



Note

- At the time of the CTM R8.0 release, CiscoView is supported on Solaris 8 but not on Solaris 10. Therefore, CiscoView is not provided with CTM R8.0. Contact your Cisco account representative to obtain CiscoView for Solaris 10 once it becomes available.
 - CTM R8.0 packaging includes four installation CDs.
 - Although Cisco makes every attempt to ensure the availability of third-party hardware and software platforms specified for CTM, Cisco reserves the right to change or modify system requirements due to third-party vendor product availability or changes that are beyond Cisco's control.
-

1.1 CTM Server Requirements

The CTM server runs on Sun Solaris 10, hardware release 06/06, on a Sun SPARC-based server. Earlier releases of Solaris 10 can be updated by applying the latest recommended patch cluster available from Sun at <http://sunsolve.sun.com/pub-cgi/show.pl?target=patches/patch-access>.

Cisco tests certain simulated network configurations, which are listed in [Table 1-1](#) to [Table 1-4](#). Your setup and performance might vary depending on the size of your network and the usage pattern of management tasks.



Note

- The CTM server must run on a dedicated workstation. Any application that is not explicitly listed in this chapter as being required or supported by CTM cannot be installed on the dedicated CTM server workstation.
- CTM is capable of using a nonlocal database, meaning the database is installed on a separate server. For information about this configuration, contact your Cisco account representative.

- CTM is not validated against Network File System (NFS)-mounted drives. Their use might require more CPU, memory, and disk space than is specified in the following tables.

**Caution**

During the Solaris 10 installation, you are prompted to select software to install. (The default is End User System Support—769 MB.) Select **Entire Distribution plus OEM support—1491 MB**. If you do not select this, the CTM installation will fail.

**Note**

When Solaris 10 is installed, it also installs the International Input Method Server (IIMS), which uses the CTM internal port 9010. Port 9010 is used by an MGX process called eventd. If the eventd process cannot start, internal CTM alarms appear continuously in the Alarm Browser. This indicates that CTM is automatically restarting the eventd process. The IIMS is required only for non-English input methods; it is not required in CTM. To avoid internal CTM alarms and to make port 9010 available, make sure that the IIMS is not running.

**Caution**

Configure your file systems to allow large files. By default, no single file can be larger than 2 GB. This can be problematic for large database installations of the CTM server. Select **Include Solaris 64-bit support**.

To install the CTM server, it is required that you have:

- Sun Solaris patches 118371-07, 118560-02, 118562-09, 118712-10, 118712-11, 118815-04, 118822-30, 118833-24, 118870-01, 118872-04, 118918-19, 118918-21, 118959-03, 119059-18, 119130-26, 119254-27, 119254-28, 119254-06, 119317-01, 119574-02, 119578-29, 119578-30, 119593-01, 119757-04, 119764-05, 119850-21, 119903-02, 119981-09, 119985-02, 120061-02, 120292-01, 120329-02, 120467-05, 120469-05, 120664-01, 120719-01, 120824-05, 120824-06, 120849-04, 120085-01, 120900-04, 121002-03, 121004-02, 121012-02, 121118-08, 121133-02, 121229-01, 121236-02, 121265-02, 121296-01, 121308-07, 121453-02, 122032-02, 122856-02, 122856-03, 122911-02, 123186-01, 123304-02, 119254-27, 119578-29, 119689-07, and 122032-01 or later, available on SunSolve Online at <http://sunsolve.sun.com>.

**Note**

Patches 119689-07 and 122032-01 are required to comply with the Daylight Saving Time changes that are planned in the United States for March 2007, as described in the Energy Policy Act of 2005. These patches are not necessary outside of U.S. time zones.

**Note**

These Solaris patches might be superseded by more recent patches. Visit Sun's website for the most up-to-date patch information.

**Note**

While installing Solaris patches, you might receive a message saying "This patch is obsoleted by patch <number>, which has already been applied to this system." This message indicates that an updated version of the patch is already installed, and no action is required.



Note Enter the `showrev -p | grep <patch_number>` command to verify that the required Solaris patches are installed.



Note Always install Solaris patches in single-user mode.

- Sun Microsystems Java Runtime Environment (JRE) Standard Edition version 1.5.0_06 (installed automatically for the CTM server and CTM GateWay/CORBA, and bundled with the CTM client).
- Oracle9i Release 2 software plus the 9.2.0.7 or 9.2.0.8 patch.



Note Both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i are supported with CTM R8.0.

- Oracle9i licenses for Sun Solaris.



Note Oracle licenses can be purchased either for the server processor or for named users. For more information on Oracle9i named users, see [1.3 Oracle Licensing for CTM, page 1-15](#).

- Available swap space (see [Table 1-9](#) and [Table 1-10, Part 2](#) for swap space requirements).
- CD-ROM drive.

1.1.1 Server Specifications

[Table 1-1](#) to [Table 1-4](#) show recommended optical, CRS-1, XR 12000, Cisco 7600, and MGX hardware specifications for installing the CTM server, and the resulting maximum number of NEs the server manages for each configuration. The tables also show sample configurations when the CTM server and Oracle9i database are installed on the same workstation. The CTM server can run on any platform that supports Sun Solaris 10.

**Note**

To calculate the memory required for multiple NE types, add the specified RAM required for each NE type. For instance, in a small network, if you are adding optical NEs (which requires 4 GB of RAM according to [Table 1-1](#)) and CRS-1 NEs (which requires 4 GB of RAM according to [Table 1-2](#)), you will require 8 GB RAM total.

**Note**

The processor requirements for UltraSPARC IV apply also to UltraSPARC IV+. CTM R8.0 requires the same number of processors regardless of whether you use UltraSPARC IV or UltraSPARC IV+.

Table 1-1 Recommended Specifications for the CTM Server Installation—Optical

Network Size	Oracle Database Type	Processor	CPU Speed	RAM	No. of Network Partitions	Max. No. of Optical NEs ¹
Small	Standard Edition	2 x UltraSPARC III or 2 x IIIi CPU	1.2 GHz	4 GB	1	200
Medium	Enterprise Edition	4 x UltraSPARC III or 2 x UltraSPARC IV CPU	1.2 GHz	16 GB	1	500
Large	Enterprise Edition	8 x UltraSPARC III or 4 x UltraSPARC IV CPU	1.2 GHz	32 GB	4	2000
High end	Enterprise Edition	8 x UltraSPARC IV CPU with fiber-channel disk array	1.2 GHz	64 GB	6	3000

1. These numbers assume you are using fully-equipped ONS 15454 MSPP nodes (for example, 12 OC-48, 2 TCC, and 1 XC10G with up to 2 SDCC links and 96 SONET cross-connections per node). Note that these numbers should be used as a guideline, and will vary depending on the software and hardware configuration of your NEs.

Values in [Table 1-2](#) assume that performance monitoring (PM) data collection is not enabled. It is recommended that you:

- Enable PM data collection only on the NEs where PM collection is required.
- Add to the PM data collection while monitoring system performance.
- Collect only the required PM data types.

Also, the values in [Table 1-2](#) are based on 5000 Access Control Lists (ACLs) and 2000 IP Explicit Paths (IEPs).

Table 1-2 Recommended Specifications for the CTM Server Installation—CRS-1 and XR 12000

Network Size	Oracle Database Type	Processor	CPU Speed	RAM	No. of Network Partitions ¹	Max. No. of CRS-1 or XR 12000 NEs ²
Small	Standard Edition	2 x UltraSPARC III or 2 x IIIi CPU	1.2 GHz	4 GB	1	20
Medium	Enterprise Edition	4 x UltraSPARC III or 2 x UltraSPARC IV CPU	1.2 GHz	16 GB	2	80
Large	Enterprise Edition	8 x UltraSPARC III or 4 x UltraSPARC IV CPU	1.2 GHz	32 GB	3	100
High end	Enterprise Edition	8 x UltraSPARC IV CPU with fiber-channel disk array	1.2 GHz	64 GB	4	130

1. In a standard configuration, the recommended maximum number of NEs per partition is 40.
 2. Note that these numbers should be used as a guideline, and will vary depending on the software and hardware configuration of your NEs.

Table 1-3 Recommended Specifications for the CTM Server Installation—Cisco 7600

Network Size	Oracle Database Type	Processor	CPU Speed	RAM	No. of Network Partitions	Max. No. of Cisco 7600 NEs ¹
Small	Standard Edition	2 x UltraSPARC III or 2 x IIIi CPU	1.2 GHz	4 GB	1	20
Medium	Enterprise Edition	4 x UltraSPARC III or 2 x UltraSPARC IV CPU	1.2 GHz	16 GB	1	40
Large	Enterprise Edition	8 x UltraSPARC III or 4 x UltraSPARC IV CPU	1.2 GHz	32 GB	1	40
High end	Enterprise Edition	8 x UltraSPARC IV CPU with fiber-channel disk array	1.2 GHz	64 GB	1	40

1. These numbers assume you are using all Cisco 7600 NEs with 9-slot chassis. Note that these numbers should be used as a guideline, and will vary depending on the software and hardware configuration of your NEs.

Table 1-4 Recommended Specifications for the CTM Server Installation—MGX

Network Size	Oracle Database Type	Processor	CPU Speed	RAM ¹	No. of Network Partitions	Max. No. of Clients	Max. No. of MGX NEs
Small	Standard Edition	2 x UltraSPARC III or 2 x IIIi CPU	1.2 GHz	4 GB	1	30	6
Medium	Enterprise Edition	4 x UltraSPARC III or 2 x UltraSPARC IV CPU	1.2 GHz	16 GB	1	50	20
Large	Enterprise Edition	8 x UltraSPARC III or 4 x UltraSPARC IV CPU	1.2 GHz	32 GB	1	50	50
High end	Enterprise Edition	8 x UltraSPARC IV CPU with fiber-channel disk array	1.2 GHz	64 GB	1	100	100

1. The memory required for the maximum number of NEs is for a single NE type. A network with multiple NE types might require additional memory.

**Note**

The installation procedure assumes that you are performing the installation directly from the workstation. X-terminal sessions are not supported for the CTM server installation.

The following list details the server configuration parameters and the effect of changes in each parameter on the maximum number of NEs the server can manage:

- Network Size—If the network size is increased from the size shown in [Table 1-1](#), [Table 1-2](#), [Table 1-3](#), and [Table 1-4](#), more resources are reserved for the higher number of NEs to be managed.
- Oracle Database Type—Standard Edition is allowed only in small configurations. In a small configuration, performance is identical whether Standard Edition or Enterprise Edition is used. In medium or larger networks, Oracle Enterprise Edition is required.
- Processor—The server can manage more NEs as the number of processors increases above what is shown in [Table 1-1](#), [Table 1-2](#), [Table 1-3](#), and [Table 1-4](#). The server can manage fewer NEs as the number of processors decreases.

- CPU Speed—The server can manage more NEs if the CPU speed is faster than what is shown in [Table 1-1](#), [Table 1-2](#), [Table 1-3](#), and [Table 1-4](#). The server can manage fewer NEs as the CPU speed decreases.
- RAM—The server can manage more NEs if the RAM increases above what is shown in [Table 1-1](#), [Table 1-2](#), [Table 1-3](#), and [Table 1-4](#). The server can manage fewer NEs as the RAM decreases.
- Number of Network Partitions—For each network partition, the server reserves resources for the higher number of NEs to be managed. The server can manage more NEs as the number of network partitions increases. The server can manage fewer NEs as the number of network partitions decreases.

1.1.2 Disk Space Specifications



Note

To calculate the disk space required for multiple NE types, add together the specified disk space required for each NE type. For instance, in a small network without PM collection, if you are adding optical NEs (which requires 49 GB of disk space according to [Table 1-5](#)) and CRS-1 NEs (which requires 46 GB of disk space according to [Table 1-6](#)), you will require 95 GB disk space total.

[Table 1-5](#) to [Table 1-8](#) show disk space requirements for optical, CRS-1, XR 12000, Cisco 7600, and MGX NEs based on network size and PM collection status when you are installing the CTM server and Oracle9i database on the same workstation. The disk space shown does not include the /ctm_backup directory.

Table 1-5 *Disk Space Requirements for Installing the CTM Server and Oracle9i on the Same Workstation—Optical*

Network Size	Maximum No. of NEs	Total Disk Space Without PM Collection	Total Disk Space with PM Collection
Small	200	50 GB	111 GB
Medium	500	80 GB	226 GB
Large	2000	142 GB	446 GB
High end	3000	234 GB	856 GB

Table 1-6 *Disk Space Requirements for Installing the CTM Server and Oracle9i on the Same Workstation—CRS-1 and XR 12000*

Network Size	Maximum No. of NEs	Total Disk Space Without PM Collection	Total Disk Space with PM Collection
Small	20	46 GB	47 GB
Medium	80	72 GB	88 GB
Large	100	100 GB	120 GB
High end	130	130 GB	156 GB

Table 1-7 Disk Space Requirements for Installing the CTM Server and Oracle9i on the Same Workstation—Cisco 7600

Network Size	Maximum No. of NEs	Total Disk Space Without PM Collection	Total Disk Space with PM Collection
Small	20	47 GB	—
Medium	40	77 GB	—
Large	40	105 GB	—
High end	40	135 GB	—

Table 1-8 Disk Space Requirements for Installing the CTM Server and Oracle9i on the Same Workstation—MGX

Network Size	Maximum No. of NEs	Total Disk Space Without PM Collection	Total Disk Space with PM Collection
Small	6	46 GB	103 GB
Medium	20	72 GB	215 GB
Large	50	133 GB	435 GB
High end	100	306 GB	952 GB

Note the following PM assumptions for optical NEs:

- In a small network, PM data collection assumes 30 days of storage for PM data collected across 200 optical NEs, assuming an average of 200 interfaces per NE, up to a maximum of 40,000 interfaces (includes logical and physical interfaces).
- In a medium network, PM data collection assumes 30 days of storage for PM data collected across 400 optical NEs, assuming an average of 200 interfaces per NE, up to a maximum of 80,000 interfaces (includes logical and physical interfaces).
- In a large network, PM data collection assumes 30 days of storage for PM data collected across 2000 optical NEs, assuming an average of 200 interfaces per NE, up to a maximum of 200,000 interfaces (includes logical and physical interfaces).
- In a high-end network, PM data collection assumes 30 days of storage for PM data collected across 3000 optical NEs, assuming an average of 200 interfaces per NE, up to a maximum of 500,000 interfaces (includes logical and physical interfaces).

1.1.3 Partition Specifications

Table 1-9 shows partition specifications for installing the CTM server and Oracle9i on the same workstation.

Table 1-9 Partition Sizing for Installing the CTM Server and Oracle9i on the Same Workstation

Network Size	root	swap	oraclesw9i	db01	db02	db03 ¹	db04 ²	db05 ³
Small	11 GB	6 GB	5 GB	5 GB	6 GB	40 GB	30 GB	8 GB
Medium	15 GB	12 GB	5 GB	8 GB	16 GB	90 GB	70 GB	10 GB
Large	15 GB	48 GB	5 GB	10 GB	26 GB	190 GB	140 GB	12 GB
High end	15 GB	96 GB	5 GB	12 GB	50 GB	360 GB	300 GB	18 GB

1. If PM collection is not enabled, the /db03 directory requires 5 GB for a small network, 8 GB for a medium network, 14 GB for a large network, and 20 GB for a high-end network.
2. If PM collection is not enabled, the /db04 directory requires 4 GB for a small network, 6 GB for a medium network, 12 GB for a large network, and 18 GB for a high-end network.
3. The /db05 directory is required only if you want to install the CTM database in ARCHIVELOG mode.

Table 1-10, Part 1 and Table 1-10, Part 2 show partition specifications for installing the CTM server and Oracle9i on separate workstations.

Table 1-10, Part 1 Partition Sizing for the CTM Server When Installing the CTM Server and Oracle9i on Separate Workstations

CTM Server								
Network Size	root	swap	oraclesw9i	db01	db02	db03	db04	db05
Small	11 GB	6 GB	5 GB	—	—	—	—	—
Medium	15 GB	12 GB	5 GB	—	—	—	—	—
Large	15 GB	48 GB	5 GB	—	—	—	—	—
High end	15 GB	96 GB	5 GB	—	—	—	—	—

Table 1-10, Part 2 Partition Sizing for the Oracle9i Database Server When Installing the CTM Server and Oracle9i on Separate Workstations

Oracle9i Database Server								
Network Size	root	swap	oraclesw9i	db01	db02	db03 ¹	db04 ²	db05 ³
Small	10 GB	4 GB	5 GB	5 GB	6 GB	40 GB	30 GB	8 GB
Medium	10 GB	6 GB	5 GB	8 GB	16 GB	90 GB	70 GB	10 GB
Large	10 GB	12 GB	5 GB	10 GB	26 GB	190 GB	140 GB	12 GB
High end	10 GB	12 GB	5 GB	12 GB	50 GB	360 GB	300 GB	18 GB

1. If PM collection is not enabled, the /db03 directory requires 5 GB for a small network, 8 GB for a medium network, 14 GB for a large network, and 20 GB for a high-end network.
2. If PM collection is not enabled, the /db04 directory requires 4 GB for a small network, 6 GB for a medium network, 12 GB for a large network, and 18 GB for a high-end network.
3. The /db05 directory is required only if you want to install the CTM database in ARCHIVELOG mode.

1.1.4 Important Note About Installing the Cisco 7600 Module

The Config Engine component of the Cisco 7600 module, which is automatically installed when the Cisco 7600 module is installed, requires and comprises the following application packages:

- Tomcat version 4.1.18
- Tibco version 7.2
- Apache version 1.3.26
- SMCtl version 8.3.1
- SMCossl version 0.9.6g
- Expect version 5.31
- CSCOTools version 1.4

If you are installing the Cisco 7600 module, you must ensure either that the server does not have these applications installed or that any installed applications on the server are the same versions as those required for the Config Engine. You can also use the **pkgrm** command to remove these packages from the server before installing CTM on the server.

To verify the application versions running on the server, enter the following commands on the command line:

- For Tomcat, enter:
`pkginfo -l tomcat`
- For Tibco, enter:
`pkginfo -l Tibco`
- For Apache, enter:
`pkginfo -l apache`
- For SMCtl, enter:
`pkginfo -l SMCtl`
- For SMCossl, enter:
`pkginfo -l SMCossl`
- For Expect, enter:
`pkginfo -l SMCexpect`
- For CSCOTools, enter:
`pkginfo -l CSCOTools`

To remove the applications from the server, enter the following commands on the command line:

- For Tomcat, enter:
`pkgrm tomcat`
- For Tibco, enter:
`pkgrm Tibco`
- For Apache, enter:
`pkgrm apache`

- For SMCtl, enter:
`pkgrm SMCtl`
- For SMCssl, enter:
`pkgrm SMCssl`
- For Expect, enter:
`pkgrm SMCexpect`
- For CSCOTools, enter:
`pkgrm CSCOTools`

1.1.5 Important Note About MGX Debug Levels and Log Files

By default, the MGX debug levels and the number of log files to retain are kept low to save disk space. During the first few installations or upgrades, it is recommended (but not mandatory) that you increase the debug level of some MGX processes to assist in debugging any issues that might arise.

It is recommended that you increase the debug level for the following processes:

- topod (debug level 5)
- ILMITopoc (debug level 5)
- oemc (debug level 7; retain up to 50 log files)
- nts (debug level 5; retain up to 20 log files)
- snmpcomm (debug level 5)
- NMServer (debug level 5; retain up to 20 log files)

For information about changing the debug level for these processes, see the [Cisco Transport Manager Release 8.0 User Guide](#), Chapter 9, section “Setting Debug Options.”

After running the system for several weeks without any issues, you can reduce the debug levels to save disk space.

1.2 CTM Client Requirements

To install the CTM client, it is recommended that you have a Sun Solaris workstation or Microsoft Windows PC configured as shown in [Table 1-11](#).

Table 1-11 Minimum Requirements for the CTM Client

Platform	Network Size	RAM ^{1,2,3}	CPUs	CPU Speed	Disk Space Without CEC ⁴	Disk Space with CEC	Other
Sun Ultra 5 workstation ⁵	Small	256 MB	1	333 MHz	640 MB	710 MB	<ul style="list-style-type: none"> Sun Solaris 10 hardware release 06/06 with Common Desktop Environment (CDE), with graphics support for 16-bit color or higher Mozilla 1.7 (the version integrated in Solaris 10 hardware release 06/06)
	Medium	512 MB					
	Large	512 MB					
	High end	1 GB					
Pentium 4 class PC	Small	512 MB	1	450 MHz	630 MB	700 MB	<ul style="list-style-type: none"> Microsoft Windows 2000 Professional with Service Pack 3, Windows XP Professional with Service Pack 2, or Windows Server 2003 Enterprise Edition with Terminal Services, each with graphics support for 16-bit color or higher Microsoft Internet Explorer 6.0 or Mozilla 1.7.12, with JavaScript enabled Microsoft Windows XP and Windows 2003 patch number KB928388 is available for the revised Daylight Saving Time in 2007
	Medium	512 MB					
	Large	512 MB					
	High end	512 MB					

1. If you are running multiple CTM client sessions on a single client workstation, add 256 MB of RAM for each additional CTM client.
2. If you are running more than two simultaneous Cisco Transport Controller (CTC) sessions on a single client workstation, add 64 MB of RAM for each CTC client.
3. It is recommended that you set the client virtual memory to two times the size of the physical memory (two times the amount of RAM).
4. Disk space requirements are for CTM and Cisco Edge Craft (CEC) client software only.
5. It is not mandatory that the CTM client run on a Sun Ultra 5 workstation. You can run the CTM client on other comparable Sun workstations.

It is strongly recommended that you install the CTM client on a workstation separate from the CTM server. Installing the CTM client and server on the same workstation consumes server resources and causes performance degradation.

CTM supports a maximum of:

- 30 simultaneous CTM client sessions for a small network
- 60 simultaneous sessions for a medium network
- 100 simultaneous sessions for a large network
- 100 simultaneous sessions for a high-end network

**Note**

If your network contains MGX nodes, the maximum number of supported clients is lower. See [Table 1-4](#).

1.2.1 Verifying the Mozilla Version for the Solaris Client

To verify the application version running on the Solaris client, enter the following commands on the command line:

- To create a link in `/usr/bin` that points to Mozilla version 1.7, enter:

```
ln -s /mozilla_installation_dir/mozilla mozilla
```

- To verify the environmental variables for Mozilla, enter:

```
echo $PATH
```

**Note**

`"/usr/bin/"` should be found inside the path string.

```
echo $LD_LIBRARY_PATH
```

**Note**

`"/usr/local/lib"` should be found inside the path string.

- To correct the environmental variables for Mozilla, enter:

```
setenv PATH /usr/bin:$PATH
setenv LD_LIBRARY_PATH /usr/local/lib
```

1.2.2 Using Remote Application Software with the CTM R8.0 Client

Client launch and operation are supported by the following remote application software:

- Windows Server 2003 Enterprise Edition with Terminal Services
- Citrix Presentation Server 4.0
- Secure Global Desktop Enterprise Edition 4.0 (previously known as Tarantella Enterprise)

**Note**

If you are using Secure Global Desktop, enable full-duplex autodetection on the GUI server interface to prevent performance slowdown.

The hardware requirements for the remote application depend on the number of clients that the system must export, calculated with the following formula:

Target RAM = base RAM + (delta RAM \times number of clients)

Target CPU = base CPU + (delta CPU \times number of clients)

where:

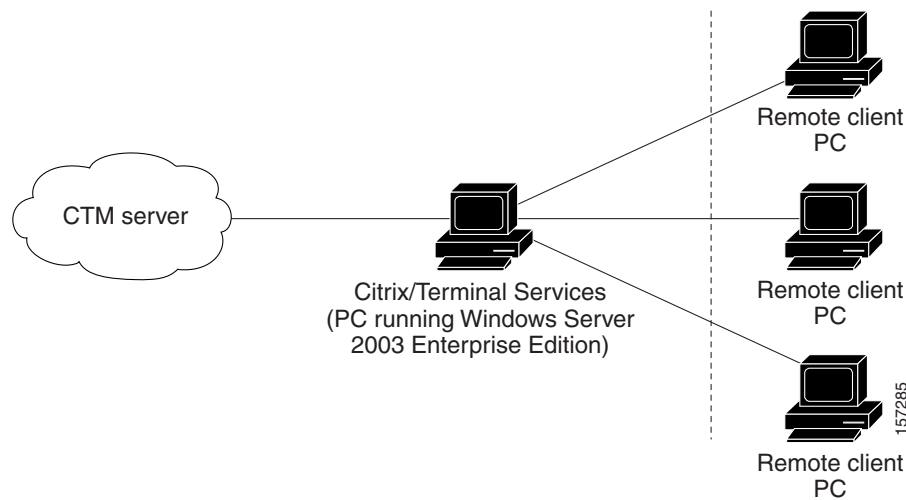
- base RAM—Amount of RAM required by the remote application software.
- base CPU—Amount of CPU required by the remote application software.

- delta RAM—Amount of RAM required for each additional client.
- delta CPU—Amount of CPU required for each additional client.

1.2.2.1 Citrix and Windows Server 2003 Terminal Services

The following figure shows the environment for a remote Citrix Presentation Server or Windows Server 2003 Terminal Server. In this example, the GUI application server and the presentation server reside on the same workstation.

Figure 1-1 Remote Citrix or Windows Server 2003 Terminal Server Environment



The following table shows requirements for a remote Citrix or Windows Server 2003 Enterprise Edition Terminal Server.

Table 1-12 Requirements for Citrix and Windows Server 2003 Enterprise Edition with Terminal Services

Remote Application Software	Base RAM	Delta RAM	Base CPU	Delta CPU
Windows Server 2003 Enterprise Edition with Terminal Services	512 MB	150 MB	450 MHz	240 MHz
Citrix Presentation Server 4.0	512 MB	150 MB	450 MHz	240 MHz

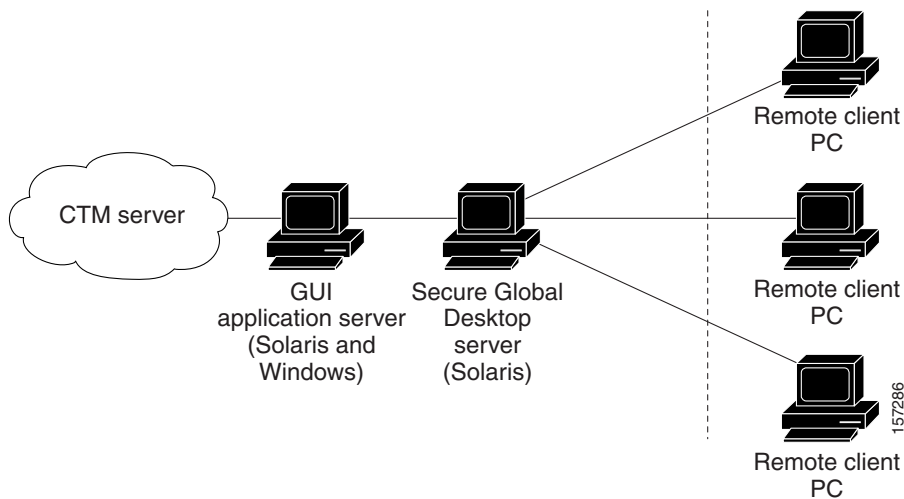
In this example, the hardware requirements for 10 clients are:

- CPU = 450 MHz + (240 MHz \times 10) = 2850 MHz
- RAM = 512 MB + (150 MB \times 10) = 2012 MB

1.2.2.2 Secure Global Desktop Enterprise Edition 4.0

The following figure shows the environment for a remote client via the Secure Global Desktop server. In this example, the GUI application server and the Secure Global Desktop server reside on different workstations. The application server can be a Windows Server 2003 Enterprise Edition with Terminal Services or a Solaris workstation.

Figure 1-2 Remote Secure Global Desktop Environment



The following table shows requirements for a remote Secure Global Desktop server on a Solaris workstation and a GUI application server on a Windows PC.

Table 1-13 Requirements for Secure Global Desktop Server and GUI Application Server on Separate Solaris and Windows Workstations

Server and Platform	Base RAM	Delta RAM	Base CPU	Delta CPU
Secure Global Desktop server on Solaris	256 MB	7 MB	100 MHz	7 MHz
GUI application server on Windows Server 2003 Enterprise Edition with Terminal Services	512 MB	150 MB	450 MHz	240 MHz

In this example, the hardware requirements for 10 clients are:

- Secure Global Desktop server CPU = 100 MHz + (7 MHz x 10) = 170 MHz
- Secure Global Desktop server RAM = 256 MB + (7 MB x 10) = 326 MB
- Application server CPU = 450 MHz + (240 MHz x 10) = 2850 MHz
- Application server RAM = 512 MB + (150 MB x 10) = 2012 MB

The following table shows requirements for a remote Secure Global Desktop server on a Solaris workstation and a GUI application server on another Solaris workstation.

Table 1-14 Requirements for Secure Global Desktop Server and GUI Application Server on Separate Solaris Workstations

Server and Platform	Base RAM	Delta RAM	Base CPU	Delta CPU
Secure Global Desktop Server on Solaris	256 MB	40 MB	100 MHz	30 MHz
GUI Application Server on Solaris	512 MB	200 MB	333 MHz	110 MHz

In this example, the hardware requirements for 10 clients are:

- Secure Global Desktop server CPU = 100 MHz + (30 MHz x 10) = 400 MHz
- Secure Global Desktop server RAM = 256 MB + (40 MB x 10) = 656 MB
- Application server CPU = 333 MHz + (110 MHz x 10) = 1433 MHz
- Application server RAM = 512 MB + (200 MB x 10) = 2512 MB

1.2.3 Java Heap Sizes

The CTM client startup script provides small and high-end memory allocation and identifies the maximum heap allocation for the client Java Virtual Machine (JVM) process. The CTM client launches with the appropriate minimum and maximum Java heap sizes based on the server configuration (small, medium, large, or high end). The following table shows the Java heap memory values.

Table 1-15 Java Heap Sizes

Network Size	Initial Heap Size	Maximum Heap Size
Small	100 MB	192 MB
Medium	128 MB	256 MB
Large	192 MB	512 MB
High end	256 MB	1024 MB



Caution

The client memory type should match (or exceed) the server memory type. If a client configured for a small network logs into a medium, large, or high-end server, the small client could crash due to memory limitations. Therefore, a warning dialog box appears if a client configured for a small network logs into a medium, large, or high-end server.

1.3 Oracle Licensing for CTM

This section explains how to calculate the total number of Oracle Named User Plus licenses required for your CTM R8.0 server and client installations. This section describes with examples the following Oracle database editions:

- [1.3.1 Oracle Enterprise Edition, page 1-17](#)
- [1.3.2 Oracle Standard Edition, page 1-17](#)



Note

See the Oracle website for detailed information about Oracle licensing definitions and requirements.

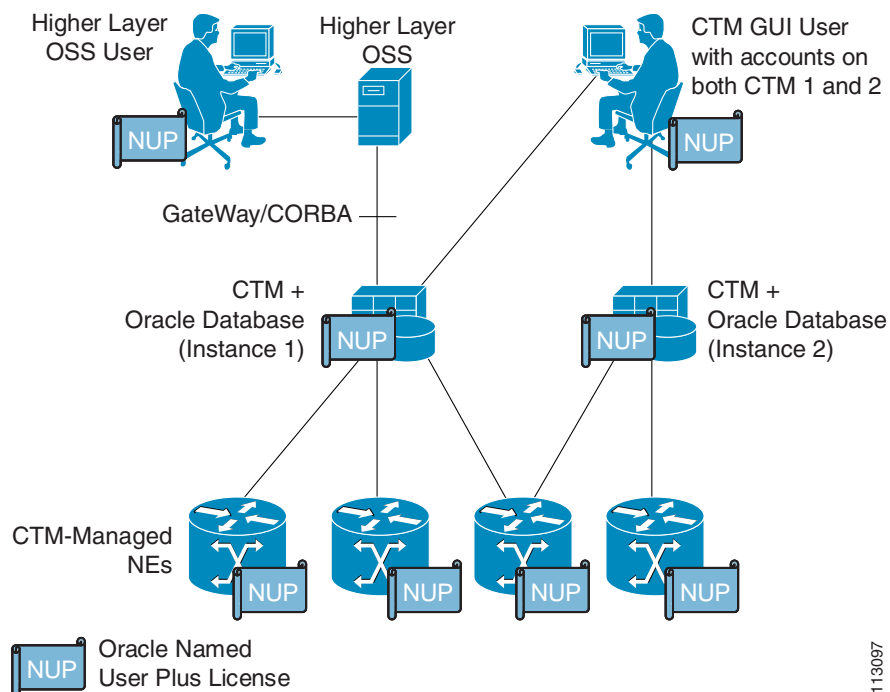
Oracle's technology products, including the Oracle database required for use with CTM, are licensed using one of two possible metrics. Which metric to use normally depends on which will result in a lower price for the database. If for some reason the number of database users cannot be counted, the Processor metric must be used. However, in a CTM environment, database users normally can be counted:

- *Processor*—This metric is defined as the number of processors on the server on which the Oracle database is installed or running. This option must be used in environments in which software users cannot easily be identified or counted (not normally the case in a CTM environment).
- *Named User Plus*—This metric is used in environments in which users can be identified and counted. Named User Plus includes both human-operated and automated devices. All human-operated and automated devices that access the program must be licensed. A Named User Plus license may access the program on any instances on which it is deployed, provided that the minimum license requirement on each server is met.

In the context of a CTM environment, *human-operated device* means any device operated by a user who has direct or indirect access to CTM. Direct access is gained through a user account on CTM that allows access through the CTM client GUI. Indirect access is possible through a user account on a higher-layer OSS, which in turn communicates with CTM through either CTM GateWay/CORBA or CTM GateWay/TL1. Automated users include the NEs managed by CTM and the CTM server itself.

The following figure shows an example CTM environment to illustrate identifying the human and automated database users that must be counted.

Figure 1-3 Example CTM Environment



In the example shown in [Figure 1-3](#) there are two independent CTM servers and Oracle database instances. There are four NEs, one of which is managed by both CTM servers. There is one direct CTM user and one indirect user. So in this example the total number of Oracle named users is as follows:

CTM servers: 2*

NEs: 4**

CTM users: 1**

Higher-layer OSS users: 1

Total Named User Plus: $8 = 2 + 4 + 1 + 1$

*Because of the *self-monitor feature* of CTM, a CTM server itself is considered an automated user of the database and is therefore counted.

**A Named User Plus license entitles the user to access Oracle on any instances where it is deployed. So if a user has access to multiple CTM servers, only a single license is needed per user. Also, if an NE is managed by multiple CTM servers, only a single license is needed per NE.

This example explains how to count the named users, but the number of named users required is the larger of either 1) the actual count or 2) the required minimum. The required minimum will vary depending on the edition of the Oracle database (for example, standard, enterprise, and so forth).

1.3.1 Oracle Enterprise Edition

Due to the scalability features included, Oracle Database Enterprise Edition (EE) is required for CTM servers managing medium to high-end CTM installations.

1.3.1.1 CTM with Oracle EE (Example A)

A service provider has 800 NEs and a data center with 10 CTM client workstations. 100 employees in the data center are authorized to use the CTM client. Some of the employees in the data center share the same CTM account (username/password). CTM is running on a Sun V880 with 8 processors and 32 GB of RAM.

- Named User Plus: 1) Minimum = 8 processors x 25 users/processor = 200 or 2) Count = 800 licenses for NEs + 100 licenses for data center personnel + 1 CTM server = 901
Result: 901 Named User Plus licenses are required
- Processor: 8 Processor licenses

1.3.1.2 CTM with Oracle EE (Example B)

The same service provider customer as in [1.3.1.1 CTM with Oracle EE \(Example A\)](#) decides to enable CTM GateWay/CORBA and connect to a higher-layer OSS that handles inventory management. There are 20 employees in the data center authorized to access the inventory system; 5 of them are also CTM users (that is, they are a subset of the 100 CTM users identified in the previous example). In this case, the total number of human users is:

95 CTM-only users + 15 inventory system-only users + 5 CTM/inventory system users, or 115 human named users.

As a result of adding the OSS and related users, the total number of named users required has increased from 901 to 916.

1.3.2 Oracle Standard Edition

For small CTM installations, Oracle Database Standard Edition (SE) offers a low-cost alternative. Oracle Database SE cannot be licensed on workstations with a capacity of greater than 4 processors.

1.3.2.1 CTM with Oracle SE (Example)

A large enterprise customer has 78 NEs and 5 CTM client workstations. 15 employees in the data center are authorized to use the CTM client. Some of the employees in the data center share the same CTM account (username/password). CTM is running on a Sun V240 with 2 processors and 4 GB RAM.

- Named User Plus: 1) Minimum = 2 processors x 5 users/processor = 10 or 2) Count = 78 licenses for NEs + 15 licenses for data center personnel + 1 CTM server = 94
Result: 94 Named User Plus licenses are required
- Processor: 2 Processor licenses

1.4 Installation Prerequisites

Before installing the CTM server and the Oracle9i database on your Sun Solaris 10 server, verify the following:

- You have the correct Solaris patches installed. (See [1.1 CTM Server Requirements, page 1-1.](#))



Note Solaris 10 can be installed only on a 64-bit workstation.

- You have the correct version of Oracle9i—Standard or Enterprise Edition, for Sun Solaris.



Note Enter the following command to determine what type of applications you can run on your operating system (OS):

```
isainfo -kv
```

If the output reads “64-bit sparcv9 kernel modules,” you can run both 64-bit and 32-bit applications. If the output reads “32-bit sparcv9 kernel modules,” you can run only 32-bit applications. It is recommended that you be able to run 64-bit applications.

- You meet all of the system requirements described in this chapter.
- The **ping** command is included in your path environment variable.
- Decide whether or not you want to install the CTM database in ARCHIVELOG mode. If you plan to perform hot database backups, ARCHIVELOG mode is required.
- Verify that your /ctm_backup directory (the disk directory for the backed-up database and configuration files) is at least as big as the total sum of your database data files. If the /ctm_backup directory is not equal to the total size of your database data files, you are prompted with a warning message that you might not have enough disk space.
- Decide which nonroot users you want to be able to run CTM UNIX commands. (See [1.4.1 Overview of Sudo Commands, page 1-19.](#))

1.4.1 Overview of Sudo Commands

Sudo software (freeware) version 1.6.6 is bundled with the CTM R8.0 software. The sudo software enables nonroot UNIX users to run the following UNIX commands:

- **ctms-start**
- **ctms-abort**
- **ctms-stop**
- **ctms-stop-service**
- **showctm**
- **getinfo.sh**
- **prune_auditlog.sh**
- **prune_errlog.sh**
- **prune_audittrail.sh**
- **prune_fm.sh**
- **prune_pm.sh**
- **prune_ne.sh**
- **prune_server_monitor.sh**
- **prune_admin_job_table.sh**
- **prune_ne_ip_address.sh**

During the CTM server installation, the setup program prompts you to specify the name of the UNIX group to which you want to assign administrator privileges. By default, this group is set to the root group. If you specify a group other than root, the setup program verifies that the UNIX group exists on the system and adds entries to the `/etc/sudoers` file. Entries in this file reflect the commands that the specified UNIX group can run by using the **sudo** command.

The following entries in the `/etc/sudoers` file reflect the commands that can be run as nonroot:

```
%CTM_UNIX_group
hostname=(root) NOPASSWD: \
/opt/CiscoTransportManagerServer/bin/ctms-start, \
/opt/CiscoTransportManagerServer/bin/ctms-abort, \
/opt/CiscoTransportManagerServer/bin/ctms-stop, \
/opt/CiscoTransportManagerServer/bin/ctms-stop-service, \
/opt/CiscoTransportManagerServer/bin/showctm, \
/opt/CiscoTransportManagerServer/bin/getinfo.sh, \
/opt/CiscoTransportManagerServer/bin/prune_auditlog.sh, \
/opt/CiscoTransportManagerServer/bin/prune_errlog.sh, \
/opt/CiscoTransportManagerServer/bin/prune_audittrail.sh, \
/opt/CiscoTransportManagerServer/bin/prune_fm.sh, \
/opt/CiscoTransportManagerServer/bin/prune_pm.sh, \
/opt/CiscoTransportManagerServer/bin/prune_ne.sh, \
/opt/CiscoTransportManagerServer/bin/prune_server_monitor.sh, \
/opt/CiscoTransportManagerServer/bin/prune_admin_job_table.sh, \
/opt/CiscoTransportManagerServer/bin/prune_ne_ip_address.sh
```

1.4.2 Explanation of the `ctms-start` Command

A complete set of administrative command scripts is added to the application during installation. One command automatically starts the CTM server processes every time the server is started. The server processes can also be started or stopped manually as necessary; the scripts are located in the `/opt/CiscoTransportManagerServer/bin` directory.

The `ctms-start` command sets the appropriate environment variables and starts the CTM server. The amount of time it takes for the CTM server to start varies based on the number of NEs in the configuration and the size of the database. Use `ctms-start` only when the CTM server has stopped.

The `ctms-start` command also starts the Config Engine if the Cisco 7600 is installed.

Step 1 Log into the CTM server workstation as the root user.

Step 2 On the command line, enter the following command:

```
ctms-start
```



Note It can take from 0 to 5 minutes for the server processes to start after the `ctms-start` command has finished execution. This is because NE services and gateway services (if enabled) are still initializing for all of the NEs that are deployed. Wait 5 minutes after entering the `ctms-start` command; then, enter the `showctm` command. The NE service corresponding to all the deployed NEs should have started.

1.4.3 Explanation of the `ctms-stop` Command

The `ctms-stop` command stops the CTM server gracefully. The stop procedure shuts down the server and cleans all memory and connections. The `ctms-stops` command also shuts down the Config Engine if the Cisco 7600 is installed. The overall process takes approximately 5 minutes.

Step 1 Log into the CTM server workstation as the root user.

Step 2 On the command line, enter the following command:

```
ctms-stop
```

1.4.4 Explanation of the `ctms-abort` Command

The `ctms-abort` command kills all of the running processes immediately and stops the CTM server. The `ctms-aborts` command also stops the Config Engine if the Cisco 7600 is installed. The overall process takes no longer than 2 to 3 minutes.

Step 1 Log into the CTM server workstation as the root user.

Step 2 On the command line, enter the following command:

```
ctms-abort
```

1.4.5 Explanation of the showctm Command

The **showctm** command provides CTM version and process information.

Step 1 Log into the CTM server workstation as the root user.

Step 2 On the command line, enter the following command:

```
showctm
```

The following is an example of the output of the **showctm** command, where all of the attributes (except for the process names) are flexible:

```
CTM Processes for Cisco Transport Manager Server Version: 8.0 Build: <build_number>
```

USER	PID	%CPU	%MEM	START	TIME	PROCESS
root	2509	0.2	0.425528	16:21:08	0:13	CTM Server
root	2463	0.0	0.018032	16:21:03	0:00	CTM Server
root	2695	0.4	4.438779289056	16:21:51	0:58	SnmpTrapService
root	2538	0.1	4.638281692280	16:21:10	0:40	SMSservice
root	2491	0.0	0.0	16:21:07	0:00	Apache Web Server

1.4.6 Explanation of the ctms-stop-service Command

The **ctms-stop-service** command kills the service and starts a new instance of the service automatically.

Step 1 Log into the CTM server workstation as the root user.

Step 2 On the command line, enter one of the following commands to stop the CTM process and automatically start a new service:

- SM service:

```
ctms-stop-service SMSservice
```

- NE/PM services:

```
ctms-stop-service <service_ID_number>
```

- CTM GateWay/CORBA service:

```
ctms-stop-service -1
```

- SNMP trap service:

```
ctms-stop-service -2
```




CHAPTER 2

Installing the CTM R8.0 Server and Oracle9i

This chapter describes how to install CTM R8.0 and Oracle9i. It contains the following sections:

- [2.1 Installing CTM R8.0 and Oracle9i on the Same Workstation, page 2-1](#)
- [2.2 Installing CTM R8.0 and Oracle9i on Separate Workstations, page 2-17](#)
- [2.3 Setting Up Sudo, page 2-44](#)



Note

For an explanation of error messages that you might encounter during the server installation, see [Appendix A, “Understanding Installation Error Messages.”](#)



Note

If you need instructions to mount or unmount CDs, see [Appendix C, “Mounting and Unmounting CDs on Sun Solaris.”](#)



Note

You must use the CTM installation CDs to complete the installation. If you manually copy the installer to a storage disk, the installation could fail because of missing permissions in the installation scripts.

2.1 Installing CTM R8.0 and Oracle9i on the Same Workstation

This section describes how to install the CTM R8.0 server and Oracle9i on the same Sun Solaris 10 server.



Note

The C shell is assumed for all UNIX commands.

2.1.1 Installing Oracle9i

This section provides supporting information to assist you with the Oracle9i installation. Use this information with Oracle’s documentation.

2.1.1.1 Setting the Environment for Installation

To set the environment for installation, log in as the root user and complete the following steps:

Step 1 Enter the following command to verify that the disk directories shown in [Table 2-1](#) exist:

```
ls -l
```

Table 2-1 Disk Directories

Directory	Contents
/db01	For the system tablespace used by Oracle
/db02	For the basedata tablespace, the alarmdata tablespace, and the eventdata tablespace used by CTM
/db03	For the data tablespace used by CTM
/db04	For the INDEX tablespace used by CTM
/db05 ¹	For the archived logs
/ctm_backup ^{2,3}	For the backed-up database and configuration files
/oraclesw9i	For the Oracle software
/tftpboot	For the TFTP directory
	Note Disk partitioning is not required for /tftpboot, but the directory is required.

1. If you want to install the CTM database in ARCHIVELOG mode, the /db05 directory is required. ARCHIVELOG mode is required for hot database backups.
2. The /ctm_backup directory can be a symbolic link to a storage device. Note that performance degrades if you map all of your symbolic links to the same partition and you do not have disk striping.
3. If the oracle user does not have read/write permission, backup and restore operations will fail. When the directory is created, `chmod 777 /ctm_backup` must be done. If a symbolic link is on the storage device, verify the command. See [2.1.1.1.1 Understanding the ctm_backup Directory, page 2-5](#).

Step 2 If your system is already configured with the standard CTM partition names (for example, /db01, /db02) proceed to [Step 3](#). If your system is not configured with the standard CTM partition names, enter the following commands to create soft links to your existing partitions:

```
ln -s /<partition_name_1> /db01
ln -s /<partition_name_2> /db02
ln -s /<partition_name_3> /db03
ln -s /<partition_name_4> /db04
ln -s /<partition_name_5> /db05
ln -s /<partition_name_6> /ctm_backup
ln -s /<partition_name_7> /oraclesw9i
```

Step 3 If you do not have a TFTP directory, complete the following substeps to create one:

a. Enter the following commands:

```
mkdir /tftpboot
chmod 777 /tftpboot
```

b. Verify that the TFTP entry in the /etc/inetd.conf file is not commented.

The following example represents a typical TFTP entry in the /etc/inetd.conf file. In this example, the TFTP directory is /tftpboot:

```
tftp dgram udp6 wait root /usr/sbin/in.tftpd in.tftpd -s /tftpboot
```

- c. If the TFTP entry is commented, remove the pound sign (#) at the beginning of the line to uncomment it.



Note Do not place servers on an NIS/NIS+ network when creating an Oracle group and a user.

- Step 4** Enter the following command to create a UNIX group for database administrators:

```
groupadd -g 3303 dba
```

- Step 5** Enter the following command to create a UNIX account to own the Oracle software:

```
useradd -g dba -m -s /bin/csh -d /oraclesw9i oracle
```

- Step 6** Enter the following command to change the oracle user password:

```
passwd oracle
```

Enter the new password; then, re-enter the password to confirm it.

- Step 7** Insert the CTM Server Disk 1 installation CD and enter the following command:

```
cd /cdrom/cdrom0/Disk1
```

- Step 8** Enter the following command to list the files in the cdrom/cdrom0/Disk1 directory:

```
ls -laR
```



Note If a list of files is returned, it indicates that you can access the CD-ROM successfully. If no files are visible, or if an error message is returned, refer to Sun Solaris documentation for mounting the CD-ROM.

- Step 9** Enter the following command to copy the default profile to the Oracle home directory:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/{small | medium | large | highend}/.cshrc /oraclesw9i/.cshrc
```

For example, to copy the default profile for a small network, enter:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/small/.cshrc /oraclesw9i/.cshrc
```



Note If you installed Oracle Standard Edition, you must copy the default profile for a small network.

- Step 10** Enter the following command to determine what type of applications you can run on your operating system (OS):

```
isainfo -kv
```

If the output reads “64-bit sparcv9 kernel modules,” you can run both 64-bit and 32-bit applications. If the output reads “32-bit sparcv9 kernel modules,” you can run only 32-bit applications.



Note It is recommended that you be able to run 64-bit applications.

- Step 11** Complete one of the following options, depending on your Oracle version:



Note The Oracle patches 9.2.0.7 and 9.2.0.8 are available officially only for 64-bit. These patches are not available for 32-bit.

- If you are installing 64-bit Oracle Enterprise Edition and 9.2.0.7, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_64bit.rsp /oraclesw9i
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

- If you are installing 64-bit Oracle Standard Edition and 9.2.0.7, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_std_64bit.rsp /oraclesw9i
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

- If you are installing 64-bit Oracle and 9.2.0.8, you must download the Oracle installation response file from Cisco.com.

Go to <http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=278875317> (which requires a registered Cisco.com username and password) and download the patchset_64bit_9208.rsp file.

Then, complete one of the following options, depending on your Oracle version:

- If you are installing 64-bit Oracle Enterprise Edition and 9.2.0.8, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_64bit.rsp /oraclesw9i
```

Then, copy the downloaded patchset_64bit_9208.rsp file to /oraclesw9i.

- If you are installing 64-bit Oracle Standard Edition and 9.2.0.8, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_std_64bit.rsp /oraclesw9i
```

Then, copy the downloaded patchset_64bit_9208.rsp file to /oraclesw9i.

Step 12 Enter the following commands to change ownership of the Oracle software directories:

```
/usr/bin/chown -R oracle:dba /oraclesw9i
/usr/bin/chown -R oracle:dba /db01
/usr/bin/chown -R oracle:dba /db02
/usr/bin/chown -R oracle:dba /db03
/usr/bin/chown -R oracle:dba /db04
/usr/bin/chown -R oracle:dba /db05
/usr/bin/chown -R oracle:dba /ctm_backup
```

Step 13 Enter the following commands to eject the CTM Server Disk 1 installation CD:

```
cd /
eject cdrom
```

Step 14 Enter the following commands to create a temporary staging area:

```
cd /
mkdir temp
chmod 777 /temp
```

Step 15 Enter the following command on both the database workstation and the server workstation:

```
vi /.cshrc
```

Step 16 Comment the “stty” statement from the /.cshrc file, if it exists.

Step 17 If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

```
/usr/openwin/bin/xhost +
```

2.1.1.1 Understanding the `ctm_backup` Directory

As shown in [Table 2-1](#), the `ctm_backup` directory is a repository used by the oracle user to back up the following main categories of information:

- CTM database
- Configuration files
- Database ARCHIVELOG files

The oracle user must have read/write permissions or the database backup will fail. The database should be blocked if the ARCHIVELOG files cannot be backed up.

Note that `ctm_backup` is a symbolic link to a user-defined directory and must have read/write permissions.

2.1.1.2 Installing the Oracle9i Software with the `.rsp` Response File Provided by Cisco



Note The C shell is assumed for all UNIX commands.

Step 1 Enter the following command to log in as the oracle user:

```
su - oracle
```



Tip To verify the username, enter the `id` command.

Step 2 Insert disk one of the Oracle9i installation CDs in the CD-ROM drive.

Step 3 Enter the following command to set the display on your terminal:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 4 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 5 Depending on your Oracle version, complete one of the following options to start the Oracle Installer:

- If you are installing 64-bit Oracle Enterprise Edition, enter:

```
cd /cdrom/disk1
./runInstaller -responseFile /oraclesw9i/svrcustom_64bit.rsp &
```

- If you are installing 64-bit Oracle Standard Edition, enter:

```
cd /cdrom/disk1
./runInstaller -responseFile /oraclesw9i/svrcustom_std_64bit.rsp &
```

Step 6 At the Inventory Location screen, click **OK**.

Step 7 The Oracle Universal Installer screen appears and prompts you to run the `/tmp/orainstRoot.sh` script. Log into another terminal window as the root user and enter the following command:

```
cd /tmp/
```



Note The Installer does not prompt you to run the `/tmp/orainstRoot.sh` script if you have a previous version of Oracle installed on your workstation or if the `/var/opt/oracle/oratab` file already exists on your workstation.

Step 8 Enter the following command to run the `orainstRoot.sh` script:

```
./orainstRoot.sh
```

Step 9 Return to the Oracle Universal Installer screen and click **Continue**.



Note The Oracle Universal Installer process might take up to 5 minutes.

Step 10 The Disk Location dialog box prompts you for disk two of the Oracle9i installation CDs. Return to the terminal window where you ran the `./runInstaller` command and press **Return** on your keyboard to bring up the command prompt.

Step 11 Enter the following command at the command prompt:

```
eject cdrom
```

Step 12 Remove disk one and insert disk two of the Oracle9i installation CDs.

Step 13 Minimize the terminal window.

Step 14 Return to the Disk Location dialog box and change the path to read:

```
/cdrom/disk2
```

Step 15 Click **OK**.

Step 16 The Disk Location dialog box prompts you for disk three of the Oracle9i installation CDs. Return to the terminal window where you ran the `./runInstaller` command and press **Return** on your keyboard to bring up the command prompt.

Step 17 Enter the following command at the command prompt:

```
eject cdrom
```

Step 18 Remove disk two and insert disk three of the Oracle9i installation CDs.

Step 19 Minimize the terminal window.

Step 20 Return to the Disk Location dialog box and change the path to read:

```
/cdrom/disk3
```

Step 21 Click **OK**.

Step 22 You are prompted to run `/oraclesw9i/product/9.2/root.sh` from another window. Log into another terminal window as the root user and enter the following command:

```
cd /oraclesw9i/product/9.2
```

Step 23 Enter the following command to run the `root.sh` script:

```
./root.sh
```

Step 24 At the prompt for the local bin directory, enter the following path in the `root.sh` script:



Note The `/oraclesw9i/product/9.2/local/bin` directory must be created before running the `root.sh` script.

```
/oraclesw9i/product/9.2/local/bin
```

Step 25 Return to the Oracle Setup Privileges screen and click **OK**.

Step 26 Enter the following command to eject the CD:

```
eject cdrom
```

2.1.1.3 Downloading the 9.2.0.7 Patch for Oracle9i

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.7 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                               9.2.0.7.0
```



- Note**
- The preceding commands will fail if Oracle9i is not installed.
 - You must create a MetaLink account to download the 9.2.0.7 patch from the Oracle website.

Step 1 Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.



Note This website is Copyright © 2004, Oracle Corporation. All rights reserved.

Step 2 Click **Patches**.

Step 3 Click **Simple Search**.

Step 4 In the Search by Patch Number(s) field, enter **4163445**.

Step 5 In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

Step 6 Click **Go**.

Step 7 Click **Download**. Download **p4163445_92070_SOLARIS64.zip**.

Step 8 As the oracle user, save the patch to the `/oraclesw9i` directory.

Step 9 Enter the following commands to prepare the patch:

```
cd /oraclesw9i
unzip p4163445_92070_SOLARIS64.zip
```

2.1.1.4 Installing the 9.2.0.7 Patch for Oracle9i

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

Step 1 Enter the following command to log into the database workstation as the oracle user:

```
su - oracle
```

Step 2 If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 3 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 4 Enter the following commands to install the 9.2.0.7 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9207.rsp
```



Note If the Disk Location screen pops up, click **Cancel**.

Step 5 At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

Step 6 At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

Step 7 The script asks if you would like to overwrite the existing files. Confirm the request.

Step 8 After the script finishes running, return to the prompt popup window and click **OK**.

Step 9 Click **Exit**.

Step 10 Enter the following commands to remove the 9.2.0.7 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm -rf /oraclesw9i/p4163445_92070_SOLARIS64.zip
rm -rf /oraclesw9i/README.html
```

2.1.1.5 Downloading the 9.2.0.8 Patch for Oracle9i

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.8 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                9.2.0.8.0
```



Note

- The preceding commands will fail if Oracle9i is not installed.
- You must create a MetaLink account to download the 9.2.0.8 patch from the Oracle website.

-
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.
- Step 2** Click **Patches**.
- Step 3** Click **Simple Search**.
- Step 4** In the Search by Patch Number(s) field, enter **4547809**.
- Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
- Step 6** Click **Go**.
- Step 7** Click **Download**. Download **p4547809_92080_SOLARIS64.zip**.
- Step 8** As the oracle user, save the patch to the /oraclesw9i directory.
- Step 9** Enter the following commands to prepare the patch:

```
cd /oraclesw9i
unzip p4547809_92080_SOLARIS64.zip
```

2.1.1.6 Installing the 9.2.0.8 Patch for Oracle9i

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

-
- Step 1** Enter the following command to log into the database workstation as the oracle user:
- ```
su - oracle
```
- Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:
- ```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
- Step 3** Enter the following command to verify that the display is set correctly:
- ```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

**Step 4** Enter the following commands to install the 9.2.0.8 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9208.rsp
```



**Note** If the Disk Location screen pops up, click **Cancel**.

**Step 5** At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

**Step 6** At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

**Step 7** The script asks if you would like to overwrite the existing files. Confirm the request.

**Step 8** After the script finishes running, return to the prompt popup window and click **OK**.

**Step 9** Click **Exit**.

### 2.1.1.7 Downloading the Oracle Patch Installer (Required Only for 9.2.0.7)

The Oracle patch installer is used with 9.2.0.7 to install additional Oracle patches. If you have already installed the Oracle patch installer or if you are using the 9.2.0.8 patch, you can skip this section.

You must log in as an oracle UNIX user to download and unzip files.

**Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.

**Step 2** Click **Patches**.

**Step 3** Click **Simple Search**.

**Step 4** In the Search by Patch Number(s) field, enter **2617419**.

**Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

**Step 6** Click **Go**.

**Step 7** Click **Download**.

**Step 8** In the list of patches returned, click the first patch, which has the latest release number.



**Note** Do not be concerned if the patch refers to a later version of Oracle.

**Step 9** In the Patch 2617419 window, go to the Platform or Language field and choose **Generic Platform** (the default).

**Step 10** Click **Download**.

**Step 11** Save the patch to the /oraclesw9i/product/9.2 directory.

**Step 12** Enter the following commands to change the patch ownership and unzip the patch:

```
chown oracle:dba /oraclesw9i/product/9.2/p2617419_10102_GENERIC.zip
cd /oraclesw9i/product/9.2
unzip p2617419_10102_GENERIC.zip
```

## 2.1.2 Updating the System Parameters



**Note** The C shell is assumed for all UNIX commands.

To update the system parameters, log in as the root user and complete the following steps:

**Step 1** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

**Step 2** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

**Step 3** Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0\_06 on your workstation.



**Note** If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.



**Note** If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

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Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your
system. This may take a moment...
```

**Step 4** Click **Next** at the Introduction screen.

- Step 5** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 6** At the Installation Options screen, choose **New installation**; then, click **Next**.
- Step 7** At the Select Products to Install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.



**Note** The Web Server check box is selected automatically when you choose Cisco Transport Manager server. The web server allows you to use an HTTP connection to download files from the CTM server to the CTM client. The web server is also used to launch the online help. The web server is required for the CTM server.



**Caution** Do not check the other check boxes on the Select Products to Install screen.



**Note** The license for CTM GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install CTM GateWay/CORBA when you install the CTM server; however, this section assumes that you are installing the two products separately. For more information, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#)



**Note** The license for CiscoView (an optional application used by CTM to configure and monitor ONS 155xx NEs) is sold separately if used to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx. If you are using this feature in a production environment to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx, you must purchase a license for LAN Management Solution (LMS) Release 2.5, which includes CiscoView.

The license for CiscoView is bundled with CTM if used to manage the ONS 15501 DC or AC. You do not need to purchase a separate CiscoView license to manage the ONS 15501 DC or AC.

- Step 8** At the Select Modules to Install screen, choose **All of the Above Modules**. Click **Next**.
- Step 9** At the Main Options screen, check only the **Check system settings** check box; then, click **Next**.



**Caution** Do not check the other check boxes on the Main Options screen. You will check the other options during the next phase of the installation.

- Step 10** At the Select Network Configuration screen, specify the size of your network; then, click **Next**.



**Note** If you installed Oracle Standard Edition, you can only choose **Small**.

- Step 11** At the Update the System Parameters screen, check the following check boxes; then, click **Next**:

- **Optimize CTM database parameters**
- **Optimize CTM server parameters**

- Step 12** At the warning prompt, click **Exit Setup** and enter the following command to reboot the system:

```
init 6
```



**Note** The warning prompt only appears the first time that the CTM software is installed. If this is not a first time installation, proceed without rebooting.

## 2.1.3 Installing the CTM R8.0 Server and Database



**Note** The C shell is assumed for all UNIX commands.

To install the CTM server, log in as the root user and complete the following steps:

**Step 1** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

**Step 2** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

**Step 3** Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0\_06 on your workstation.



**Note** If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.



**Note** If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your system. This may take a moment...
```

**Step 4** Click **Next** at the Introduction screen.

- Step 5** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 6** At the Installation Options screen, choose **New installation**; then, click **Next**.
- Step 7** At the Select Products to Install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.




---

**Note** The Web Server check box is selected automatically when you choose Cisco Transport Manager server. The web server allows you to use an HTTP connection to download files from the CTM server to the CTM client. The web server is also used to launch the online help. The web server is required for the CTM server.

---




---

**Caution** Do not check the other check boxes on the Select Products to Install screen.

---




---

**Note** The license for CTM GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install CTM GateWay/CORBA when you install the CTM server; however, this section assumes that you are installing the two products separately. For more information, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#)

---

- Step 8** At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.

- Optical Module: ONS 15xxx (inc. shelf controller)
- Cisco MGX Voice Gateway
- IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
- IOS Module: Cisco 7600
- All of the Above Modules




---

**Note**

- The MDS 9000 module is a common module that will be installed with any selection.
- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.
- The Catalyst 6509 is included in the optical module and IOS XR module.

---

- Step 9** At the Main Options screen, check the **Check system settings**, **Create CTM database**, and **Install CTM server** check boxes; then, click **Next**.
- Step 10** At the Select Network Configuration screen, specify the size of your network; then, click **Next**.
- Step 11** At the Update the System Parameters screen, check only the **Optimize CTM server parameters** check box; then, click **Next**.
- Step 12** At the CTM Group Information & Sudo Installation screen, complete the following substeps:
- a. Enter the name of the UNIX group to which you want to assign administrator privileges.
  - b. To install sudo, check the **Install CTM Sudo** check box. If you do not want to install sudo, uncheck the check box.
  - c. Click **Next**.




---

**Note** For information about the sudo feature, see [1.4.1 Overview of Sudo Commands, page 1-19](#).

---

- Step 13** (For optical and Cisco 7600 modules only) At the FTP Information screen, complete the following substeps to configure an FTP account for software download operations:
- a. Enter the following information:
    - FTP username
    - FTP user password
    - Confirm FTP user password
    - FTP directory
  - b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the CTM server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the CTM server workstation.
  - c. Click **Next**.
- Step 14** At the Server IP Address screen, specify an IP address for the CTM server; then, click **Next**.
- Step 15** (For optical, IOS XR, and Cisco 7600 modules only) At the Configure TFTP Server screen, complete the following substeps if you want to enable TFTP:
- a. Check the **Enable TFTP Server** check box.
  - b. Enter the TFTP directory name. The default is /tftpboot.
  - c. Click **Next**.
- Step 16** At the Database Information screen, specify the IP address of the database workstation and specify whether or not you want to install the database in ARCHIVELOG mode. Click **Next**.
- Step 17** At the CTM Database Installation Directories screen, the setup program verifies that the directories exist as recommended in [Table 2-1](#). Click **Next**.
- Step 18** At the Destination Folder screen, specify where you want to install the CTM server. The default directory is /opt/CiscoTransportManagerServer. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.




---

**Note** If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.

---




---

**Note** Do not specify any mount point as the target installation directory for the server installation, or the installation data might be lost when the workstation restarts.

---

**Caution**


---

CTM checks for the /opt/CiscoTransportManagerServer directory or a symbolic link to it. If CTM cannot find the /opt/CiscoTransportManagerServer directory or a symbolic link, CTM creates a symbolic link automatically. Therefore, do not delete any instances of /opt/CiscoTransportManagerServer from your CTM file structure.

---

- Step 19** The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.

- Step 20** At the Insert New Media screen, complete the following substeps:
- Eject the CTM Server Disk 1 installation CD, insert the CTM Server Disk 2 installation CD, and click **Browse**.
  - The Select a Folder dialog box opens. Double-click **cdrom**; then, double-click **cdrom0**, and then single-click **Disk2**. The filename text box now reads `/cdrom/cdrom0/Disk2`.
  - In the Select a Folder dialog box, click **Select**.
  - In the Insert New Media screen, click **OK**.
- Step 21** At the Insert New Media screen, complete the following substeps:
- Eject the CTM Server Disk 2 installation CD, insert the CTM Server Disk 3 installation CD, and click **Browse**.
  - The Select a Folder dialog box opens. Double-click **cdrom**; then, double-click **cdrom0**, and single-click **Disk3**. The filename text box now reads `/cdrom/cdrom0/Disk3`.
  - In the Select a Folder dialog box, click **Select**.
  - In the Insert New Media screen, click **OK**.
- Step 22** The Web Server Installation Summary screen summarizes the results of the web server installation. Click **Next**.
- Step 23** The Install Complete screen summarizes the results of the installation. Click **Done**.
- Step 24** As the root user, enter the following command to reboot the system. The CTM server starts automatically after rebooting:

**Caution**

After you click the Done button, background processes continue to run for several minutes. Before rebooting, you must wait for the reboot message on the terminal where you started the installation. Depending on the server performance, the background processes can take up to 15 minutes before the reboot message appears. Rebooting the server before this message appears will break CTM functionalities.

```
init 6
```

- Step 25** To verify that the CTM R8.0 server is running, enter the **showctm** command after the server reboots. The **showctm** command displays the CTM server version running as 8.0, followed by the build number. In the output, you will see two instances of “CTM Server,” “SnmpTrapService,” “SMService,” and “Apache Web Server.” This indicates that the CTM server is running. You should also see NE-specific processes, depending on your network. You might also see CTM GateWay/CORBA and CTM GateWay/TL1 instances.

## 2.1.4 Copying the Client Upgrade Files After the CTM Server Installation

You have two options for upgrading each client installation to the latest version of CTM that is on the server. You can choose to:

- Manually upgrade each client installation. If you have a previously installed version of the CTM client, you must delete the directory where the previous client is installed before installing the CTM R8.0 client. See [5.1 Installing the CTM Client and Cisco Edge Craft on Microsoft Windows, page 5-2](#) or [5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris, page 5-7](#) for more information.

- Automatically upgrade each client when it connects to a server. During login, if the CTM client software version is older than the CTM server software version, the client will be prompted for upgrade. See [5.2 Starting the CTM Client in Microsoft Windows, page 5-5](#) or [5.5 Starting the CTM Client in Sun Solaris, page 5-9](#) for more information.

For this option you must copy the client installation files to the server. The CTM client and server installation files reside on separate installation CDs. Files for the Solaris client are located on Disk 1; files for the Windows client are located on Disk 2.

To copy the client installation files to the server, you must eject the CTM server CD, insert the CTM client CD, and run an automated script, `CopyUpgradeFiles.sh`, to copy the client installation files to a specific folder under the CTM server installation directory. To do this, log in as the root user and complete the following steps.



**Note** The CTM server must be installed before completing the following steps.

**Step 1** Enter the following commands to eject the CTM server installation CD:

```
cd /
eject cdrom
```

**Step 2** Insert the CTM client installation CD and enter the following command:

```
cdrom/cdrom0/ctmc/CopyUpgradeFiles.sh
```

You should see the following output:

```
Copying the client upgrade files can take several minutes.
Copying CTM Client upgrade files...
Copying Solaris client upgrade files
Solaris client upgrade files copied
Please insert CTM client Windows CD to CD ROM, Copy will continue in 60 seconds...
Could not find Window Client CD, Please insert CTM client Windows CD to continue
Copy will continue in 300 seconds...
Copying Windows client upgrade files
Done...All upgrade files have been copied to server successfully!
Please hit Enter key to return to the prompt mode
```



**Note** This operation will occupy 800 MB of disk space.

## 2.2 Installing CTM R8.0 and Oracle9i on Separate Workstations

This section describes how to install the CTM R8.0 server and Oracle9i on separate Sun Solaris 10 servers.



**Note** The C shell is assumed for all UNIX commands entered during the server installation.

## 2.2.1 Installing Oracle9i on the CTM Server Workstation

This section describes how to install the Oracle9i client software on a Sun Solaris 10 server to meet the CTM server requirements for a remote database configuration.

Log in as the root user on the workstation where the CTM server will run and complete the following steps:

**Step 1** Enter the following command to verify that the disk directories shown in [Table 2-2](#) exist:

```
ls -l
```

**Table 2-2** Disk Directories

| Directory                | Contents                                                                                    |
|--------------------------|---------------------------------------------------------------------------------------------|
| /ctm_backup <sup>1</sup> | For the backed-up configuration files                                                       |
| /oraclesw9i              | For the Oracle software                                                                     |
| /tftpboot                | For the TFTP directory                                                                      |
|                          | <b>Note</b> Disk partitioning is not required for /tftpboot, but the directory is required. |

1. The /ctm\_backup directory can be a symbolic link to a storage device. Note that performance degrades if you map all of your symbolic links to the same partition and you do not have disk striping.

**Step 2** If your system is already configured with the standard CTM partition names proceed to [Step 3](#). If your system is not configured with the standard CTM partition names, enter the following commands to create soft links to your existing partitions:

```
ln -s /<partition_name_1> /ctm_backup
ln -s /<partition_name_2> /oraclesw9i
```

**Step 3** Enter the following command to enable the xterm connection from the clients:

```
/usr/openwin/bin/xhost +
```

**Step 4** Enter the following command to create a UNIX group for database administrators:

```
groupadd -g 3303 dba
```

**Step 5** Enter the following command to create a UNIX account to own the Oracle software:

```
useradd -g dba -m -s /bin/csh -d /oraclesw9i oracle
```

**Step 6** Enter the following command to change the oracle user password:

```
passwd oracle
```

Enter the new password; then, re-enter the password to confirm it.

**Step 7** Insert the CTM Server Disk 1 installation CD.

**Step 8** Enter the following command to copy the default profile to the Oracle home directory:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/{small | medium | large | highend}/.cshrc
/oraclesw9i/.cshrc
```

For example, to copy the default profile for a small network, enter:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/small/.cshrc /oraclesw9i/.cshrc
```

**Step 9** Complete one of the following options, depending on your Oracle version:



**Note** The Oracle patches 9.2.0.7 and 9.2.0.8 are available officially only for 64-bit. These patches are not available for 32-bit.

- If you are installing 64-bit Oracle Enterprise Edition and 9.2.0.7, enter the following commands to copy the clientcustom\_64bit.rsp response file to your workstation:

```
cp /cdrom/cdrom0/Disk1/clientcustom_64bit.rsp /oraclesw9i
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

- If you are installing 64-bit Oracle Standard Edition and 9.2.0.7, enter the following commands to copy the clientcustom\_std\_64bit.rsp response file to your workstation:

```
cp /cdrom/cdrom0/Disk1/clientcustom_std_64bit.rsp /oraclesw9i
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

- If you are installing 64-bit Oracle and 9.2.0.8, you must download the Oracle installation response file from Cisco.com.

Go to <http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=278875317> (which requires a registered Cisco.com username and password) and download the patchset\_64bit\_9208.rsp file. Then, complete one of the following options, depending on your Oracle version:

- If you are installing 64-bit Oracle Enterprise Edition and 9.2.0.8, enter:

```
cp /cdrom/cdrom0/Disk1/clientcustom_64bit.rsp /oraclesw9i
```

Then, copy the downloaded patchset\_64bit\_9208.rsp file to /oraclesw9i.

- If you are installing 64-bit Oracle Standard Edition and 9.2.0.8, enter:

```
cp /cdrom/cdrom0/Disk1/clientcustom_std_64bit.rsp /oraclesw9i
```

Then, copy the downloaded patchset\_64bit\_9208.rsp file to /oraclesw9i.

**Step 10** Enter the following commands to change ownership of the Oracle software directories:

```
/usr/bin/chown -R oracle:dba /oraclesw9i
/usr/bin/chown -R oracle:dba /ctm_backup
```

**Step 11** Enter the following commands to eject the CTM Server Disk 1 installation CD:

```
cd /
eject cdrom
```

**Step 12** Enter the following command to log in as the oracle user:

```
su - oracle
```



**Tip** To verify the username, enter the **id** command.

**Step 13** Insert disk one of the Oracle9i installation CDs.

**Step 14** Enter the following command to set the display on your terminal:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

**Step 15** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

**Step 16** Enter the following command to point to the cdrom/cdrom0 directory:

```
cd /cdrom/cdrom0
```

**Step 17** Depending on your Oracle version, complete one of the following options to install the Oracle client:

- If you are installing 64-bit Oracle Enterprise Edition, enter:  

```
./runInstaller -silent -responseFile /oraclesw9i/clientcustom_64bit.rsp
```
- If you are installing 64-bit Oracle Standard Edition, enter:  

```
./runInstaller -silent -responseFile /oraclesw9i/clientcustom_std_64bit.rsp
```

**Step 18** The Oracle Universal Installer screen prompts you to run the /tmp/orainstRoot.sh script. Log into another terminal window as the root user and enter the following command:

```
cd /tmp
```




---

**Note** The Installer does not prompt you to run the /tmp/orainstRoot.sh script if you have a previous version of Oracle installed on your workstation or if the /var/opt/oracle/oratab file already exists on your workstation.

---

**Step 19** Enter the following command to run the orainstRoot.sh script:

```
./orainstRoot.sh
```

**Step 20** Return to the Oracle Universal Installer screen and click **Continue**.




---

**Note** The Oracle Universal Installer process might take up to 5 minutes.

---

**Step 21** You are prompted to run /oraclesw9i/product/9.2/root.sh from another window. Log into another terminal window as the root user and enter the following command:

```
cd /oraclesw9i/product/9.2
```

**Step 22** Enter the following command to run the root.sh script:

```
./root.sh
```

**Step 23** At the prompt for the local bin directory, enter the following command in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

**Step 24** Return to the Oracle Setup Privileges screen and click **OK**.

**Step 25** Enter the following commands to eject the CD:

```
cd /
eject cdrom
```

---

### 2.2.1.1 Downloading the 9.2.0.7 Patch for Oracle9i on the CTM Server Workstation

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.7 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch 9.2.0.7.0
```

- 
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.
  - Step 2** Click **Patches**.
  - Step 3** Click **Simple Search**.
  - Step 4** In the Search by Patch Number(s) field, enter **4163445**.
  - Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
  - Step 6** Click **Go**.
  - Step 7** Click **Download**. Download **p4163445\_92070\_SOLARIS64.zip**.
  - Step 8** As the oracle user, save the patch to the /oraclesw9i directory.
  - Step 9** As the oracle user, enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4163445_92070_SOLARIS64.zip
```

---

### 2.2.1.2 Installing the 9.2.0.7 Patch for Oracle9i on the CTM Server Workstation

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

- 
- Step 1** Enter the following command to log into the database workstation as the oracle user:
 

```
su - oracle
```
  - Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:
 

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
  - Step 3** Enter the following command to verify that the display is set correctly:
 

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```
  - Step 4** Enter the following commands to install the 9.2.0.7 patch:
 

```
cd /oraclesw9i/Disk1
```

```
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9207.rsp
```



**Note** If the Disk Location screen pops up, click **Cancel**.

**Step 5** At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

**Step 6** At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

**Step 7** The script asks if you would like to overwrite the existing files. Confirm the request.

**Step 8** After the script finishes running, return to the prompt popup window and click **OK**.

**Step 9** Click **Exit**.

**Step 10** Enter the following commands to remove the 9.2.0.7 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm -rf /oraclesw9i/p4163445_92070_SOLARIS64.zip
rm -rf /oraclesw9i/README.html
```

### 2.2.1.3 Downloading the 9.2.0.8 Patch for Oracle9i on the CTM Server Workstation

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.8 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch 9.2.0.8.0
```

**Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.

**Step 2** Click **Patches**.

**Step 3** Click **Simple Search**.

**Step 4** In the Search by Patch Number(s) field, enter **4547809**.

**Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

**Step 6** Click **Go**.

**Step 7** Click **Download**. Download **p4547809\_92080\_SOLARIS64.zip**.

**Step 8** As the oracle user, save the patch to the /oraclesw9i directory.

**Step 9** As the oracle user, enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4547809_92080_SOLARIS64.zip
```

---

### 2.2.1.4 Installing the 9.2.0.8 Patch for Oracle9i on the CTM Server Workstation

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

---

**Step 1** Enter the following command to log into the database workstation as the oracle user:

```
su - oracle
```

**Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

**Step 3** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

**Step 4** Enter the following commands to install the 9.2.0.8 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9208.rsp
```



---

**Note** If the Disk Location screen pops up, click **Cancel**.

---

**Step 5** At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

**Step 6** At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

**Step 7** The script asks if you would like to overwrite the existing files. Confirm the request.

**Step 8** After the script finishes running, return to the prompt popup window and click **OK**.

**Step 9** Click **Exit**.

---

### 2.2.1.5 Downloading the Oracle Patch Installer on the CTM Server Workstation (Required Only for 9.2.0.7)

The Oracle patch installer is used with 9.2.0.7 to install additional Oracle patches. If you have already installed the Oracle patch installer or if you are using the 9.2.0.8 patch, you can skip this section.

You must log in as an oracle UNIX user to download and unzip files.

- 
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.
  - Step 2** Click **Patches**.
  - Step 3** Click **Simple Search**.
  - Step 4** In the Search by Patch Number(s) field, enter **2617419**.
  - Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
  - Step 6** Click **Go**.
  - Step 7** Click **Download**.
  - Step 8** In the list of patches returned, click the first patch, which has the latest release number.




---

**Note** Do not be concerned if the patch refers to a later version of Oracle.

---

- Step 9** In the Patch 2617419 window, go to the Platform or Language field and choose **Generic Platform** (the default).
- Step 10** Click **Download**.
- Step 11** Save the patch to the `/oraclesw9i/product/9.2` directory.
- Step 12** Enter the following commands to change the patch ownership and unzip the patch:

```
chown oracle:dba /oraclesw9i/product/9.2/p2617419_10102_GENERIC.zip
cd /oraclesw9i/product/9.2
unzip p2617419_10102_GENERIC.zip
```

---

### 2.2.1.6 Setting Up the UNIX Environment on the CTM Server Workstation

- 
- Step 1** Insert the CTM Server Disk 1 installation CD.
  - Step 2** If the `tnsnames.ora` file in the `/oraclesw9i/product/9.2/network/admin` directory exists, enter the following command to copy it from the CTM Server Disk 1 installation CD:
 

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/{small | medium | large | highend}/tnsnames.ora /oraclesw9i/product/9.2/network/admin/tnsnames.ora
```
  - Step 3** If the `listener.ora` file in the `/oraclesw9i/product/9.2/network/admin` directory exists, enter the following command to copy it from the CTM Server Disk 1 installation CD:
 

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/{small | medium | large | highend}/listener.ora /oraclesw9i/product/9.2/network/admin/listener.ora
```
  - Step 4** If the `sqlnet.ora` file in the `/oraclesw9i/product/9.2/network/admin` directory exists, enter the following command to copy it from the CTM Server Disk 1 installation CD:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/{small | medium | large |
highend}/sqlnet.ora /oraclesw9i/product/9.2/network/admin/sqlnet.ora
```

**Step 5** Enter the following commands to change file permissions and ownership:

```
chmod +w /oraclesw9i/product/9.2/network/admin/*
chown oracle:dba /oraclesw9i/product/9.2/network/admin/*
```

**Step 6** Edit the `tnsnames.ora` file by replacing the parameter `newdbname` with the default CTM SID (which is `CTM`) and the parameter `CTMhostname` with the hostname or IP address of the workstation where you will install the CTM database.



**Note** There are multiple instances of the parameter `newdbname`, and you must replace all instances with `CTM`.

**Step 7** Edit the `listener.ora` file by replacing the parameter `newdbname` with the default CTM SID (which is `CTM`) and the parameter `CTMhostname` with the hostname or IP address of the workstation where you will install the CTM database.



**Note** There are multiple instances of the parameter `newdbname`, and you must replace all instances with `CTM`.

**Step 8** Edit the `/var/opt/oracle/oratab` file by adding the following line as the first line in the file:

```
CTM:/oraclesw9i/product/9.2:N
```



**Note** The default Oracle SID is `CTM`.

## 2.2.2 Updating the System Parameters on the CTM Server Workstation

To update the system parameters, log in as the root user on the workstation where the CTM server will run and complete the following steps:

**Step 1** If you do not have a TFTP directory, complete the following substeps to create one:

a. Enter the following commands:

```
mkdir /tftpboot
chmod 777 /tftpboot
```

b. Verify that the TFTP entry in the `/etc/inetd.conf` file is not commented.

The following example represents a typical TFTP entry in the `/etc/inetd.conf` file. In this example, the TFTP directory is `/tftpboot`:

```
tftp dgram udp6 wait root /usr/sbin/in.tftpd in.tftpd -s /tftpboot
```

c. If the TFTP entry is commented, remove the pound sign (`#`) at the beginning of the line to uncomment it.

**Step 2** Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The CTM server installation begins. Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your
system. This may take a moment...
```

The setup program searches for Sun Microsystems JRE version 1.5.0\_06 on your workstation.



**Note** If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.

- Step 3** Click **Next** at the Introduction screen.
- Step 4** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 5** At the Installation Options screen, choose **New installation**; then, click **Next**.
- Step 6** At the Select Products to Install screen, check the **Cisco Transport Manager server** check box. The Web Server check box is selected by default. Click **Next**.
- Step 7** At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.
- Optical Module: ONS 15xxx (inc. shelf controller)
  - Cisco MGX Voice Gateway
  - IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
  - IOS Module: Cisco 7600
  - All of the Above Modules



**Note**

- The MDS 9000 module is a common module that will be installed with any selection.
- Additional individual modules can be installed after the original module installation is complete. For installation of additional modules, the server will need to be reinstalled but the database does not need to be recreated.
- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.

- Step 8** At the Main Options screen, check only the **Check system settings** check box; then, click **Next**.



**Caution** Make sure to uncheck the other check boxes on the Main Options screen.

- Step 9** At the Select Network Configuration screen, specify the size of your network; then, click **Next**.



**Note** If you installed Oracle Standard Edition, you can only choose **Small**.

- Step 10** At the Update the System Parameters screen, check only the **Optimize CTM server parameters** check box; then, click **Next**.
- Step 11** At the CTM Group Information & Sudo Installation screen, confirm the name of the UNIX group to which you want to assign administrator privileges. Check or uncheck the **Install CTM Sudo** check box. Click **Next**.
- Step 12** (For optical and Cisco 7600 modules only) At the FTP Information screen, accept the default values; then, click **Next**.
- Step 13** At the warning prompt, click **Exit Setup** and enter the following command to reboot the system:
- ```
init 6
```

2.2.3 Installing the CTM R8.0 Server on the CTM Server Workstation

To install the CTM R8.0 server, log in as the root user on the workstation where the CTM server will run and complete the following steps:

- Step 1** Insert the CTM Server Disk 1 installation CD and enter the following commands:
- ```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```
- The CTM server installation begins. Wait for up to 60 seconds while the following message appears:
- ```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your  
system. This may take a moment...
```
- Step 2** Click **Next** at the Introduction screen.
- Step 3** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 4** At the Installation Options screen, choose **New installation**; then, click **Next**.
- Step 5** At the Select Products to Install screen, check the **Cisco Transport Manager server** check box. The Web Server check box is selected by default. Click **Next**.
- Step 6** At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.
- Optical Module: ONS 15xxx (inc. shelf controller)
 - Cisco MGX Voice Gateway
 - IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
 - IOS Module: Cisco 7600
 - All of the Above Modules



Note

- The MDS 9000 module is a common module that will be installed with any selection.
- You cannot install the Cisco 7600 module without /etc/resolv.conf on the workstation.
- The Catalyst 6509 is included in the optical module and the IOS XR module.

- Step 7** At the Main Options screen, check the **Install CTM server** check box; then, click **Next**.



Caution Make sure to uncheck the other check boxes on the Main Options screen.

Step 8 At the Select Network Configuration screen, specify the size of your network; then, click **Next**.



Note If you installed Oracle Standard Edition, you can only choose **Small**.

Step 9 At the CTM Group Information & Sudo Installation screen, confirm the name of the UNIX group to which you want to assign administrator privileges. Check or uncheck the **Install CTM Sudo** check box. Click **Next**.

Step 10 (For optical and Cisco 7600 modules only) At the FTP Information screen, complete the following substeps to configure an FTP account for software download operations:

- a. Enter the following information:
 - FTP username
 - FTP user password
 - Confirm FTP user password
 - FTP directory
- b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the CTM server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the CTM server workstation.
- c. Click **Next**.

Step 11 At the Server IP Address screen, accept the default value and click **Next**.



Note If you are installing the MGX module, you are prompted for the hostname, which is editable.

Step 12 (For optical, IOS XR, and Cisco 7600 modules only) At the Configure TFTP screen, complete the following substeps if you want to enable TFTP:

- a. Check the **Enable TFTP Server** check box.
- b. Enter the TFTP directory name. The default is /tftpboot.
- c. Click **Next**.

Step 13 At the Specify CTM Database to Connect to screen, enter the IP address or hostname of the workstation where you will install the CTM database; then, click **Next**.



Caution Be sure to enter the correct IP address or hostname. Do not simply accept the default.



Note If you entered a hostname, the setup program automatically translates the hostname to a physical IP address and prompts you to confirm the address. Click **Yes**.

Step 14 At the Destination Folder screen, specify where you want to install the CTM server. The default directory is /opt/CiscoTransportManagerServer. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.



Note If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.



Note Do not specify any mount point as the target installation directory for the server installation, or the installation data might be lost when the workstation restarts.



Caution CTM checks for the `/opt/CiscoTransportManagerServer` directory or a symbolic link to it. If CTM cannot find the `/opt/CiscoTransportManagerServer` directory or a symbolic link, CTM creates a symbolic link automatically. Therefore, do not delete any instances of `/opt/CiscoTransportManagerServer` from your CTM file structure.

- Step 15** The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.
- Step 16** At the Insert New Media screen, complete the following substeps:
- Eject the CTM Server Disk 1 installation CD, insert the CTM Server Disk 2 installation CD, and click **Browse**.
 - The Select a Folder dialog box opens. Double-click **cdrom**; then, single-click **cdrom0**. The filename text box now reads `/cdrom/cdrom0`.
 - In the Select a Folder dialog box, click **Select**.
 - In the Insert New Media screen, click **OK**.
- Step 17** The Web Server Installation Summary screen summarizes the results of the web server installation. Click **Next**.
- Step 18** The Install Complete screen summarizes the results of the installation. Click **Done**.
- Step 19** After you click the Done button, background processes continue to run for several minutes. When the installation is complete, the following message is displayed:

```
Installation complete. Please see <install_directory>/install.log for details.
Please REBOOT THE SYSTEM before starting Cisco Transport Manager Server
```

Do not reboot the system at this time. Before rebooting, you must install the CTM database, which you will do in a later section.

2.2.4 Copying the Client Upgrade Files After the CTM Server Installation

You have two options for upgrading each client installation to the latest version of CTM that is on the server. You can choose to:

- Manually upgrade each client installation. If you have a previously installed version of the CTM client, you must delete the directory where the previous client is installed before installing the CTM R8.0 client. See [5.1 Installing the CTM Client and Cisco Edge Craft on Microsoft Windows, page 5-2](#) or [5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris, page 5-7](#) for more information.

- Automatically upgrade each client when it connects to a server. During login, if the CTM client software version is older than the CTM server software version, the client will be prompted for upgrade. See [5.2 Starting the CTM Client in Microsoft Windows, page 5-5](#) or [5.5 Starting the CTM Client in Sun Solaris, page 5-9](#) for more information.

For this option you must copy the client installation files to the server. The CTM client and server installation files reside on separate installation CDs. To copy the client installation files to the server, you must eject the CTM server CD, insert the CTM client CD, and run an automated script, `CopyUpgradeFiles.sh`, to copy the client installation files to a specific folder under the CTM server installation directory. To do this, log in as the root user and complete the following steps.

**Note**

The CTM server must be installed before completing the following steps.

Step 1 Enter the following commands to eject the CTM server installation CD:

```
cd /
eject cdrom
```

Step 2 Insert the CTM client installation CD and enter the following command:

```
cdrom/cdrom0/ctmc/CopyUpgradeFiles.sh
```

You should see the following output:

```
Copying the client upgrade files can take several minutes.
Copying CTM Client upgrade files...
Copying Solaris client upgrade files
Solaris client upgrade files copied
Please insert CTM client Windows CD to CD ROM, Copy will continue in 60 seconds...
Could not find Window Client CD, Please insert CTM client Windows CD to continue
Copy will continue in 300 seconds...
Copying Windows client upgrade files
Done...All upgrade files have been copied to server successfully!
Please hit Enter key to return to the prompt mode
```

**Note**

This operation will occupy 800 MB of disk space.

2.2.5 Installing Oracle9i on the CTM Database Workstation

This section provides supporting information to assist you with the Oracle9i installation. Use this information with Oracle's documentation.

2.2.5.1 Setting the Environment for Installation on the CTM Database Workstation

To set the environment for installation, log in as the root user on the workstation where the CTM database will run and complete the following steps:

Step 1 Enter the following command to verify that the disk directories shown in [Table 2-3](#) exist:

```
ls -l
```

Table 2-3 Disk Directories

Directory	Contents
/db01	For the system tablespace used by Oracle
/db02	For the basedata tablespace, the alarmdata tablespace, the eventdata tablespace used by CTM, and the system tablespace used by Oracle
/db03	For the data tablespace used by CTM
/db04	For the INDEX tablespace used by CTM
/db05 ¹	For the archived logs
/ctm_backup ²	For the backed-up database and configuration files
/oraclesw9i	For the Oracle software
/tftpboot	For the TFTP directory
	Note Disk partitioning is not required for /tftpboot, but the directory is required.

1. If you want to install the CTM database in ARCHIVELOG mode, the /db05 directory is required. ARCHIVELOG mode is required for hot database backups.
2. The /ctm_backup directory can be a symbolic link to a storage device. Note that performance degrades if you map all of your symbolic links to the same partition and you do not have disk striping.

Step 2 If your system is already configured with the standard CTM partition names (for example, /db01, /db02) proceed to [Step 3](#). If your system is not configured with the standard CTM partition names, enter the following commands to create soft links to your existing partitions:

```
ln -s /<partition_name_1> /db01
ln -s /<partition_name_2> /db02
ln -s /<partition_name_3> /db03
ln -s /<partition_name_4> /db04
ln -s /<partition_name_5> /db05
ln -s /<partition_name_6> /ctm_backup
ln -s /<partition_name_7> /oraclesw9i
```

Step 3 Enter the following command to create a UNIX group for database administrators:

```
groupadd -g 3303 dba
```

Step 4 Enter the following command to create a UNIX account to own the Oracle software:

```
useradd -g dba -m -s /bin/csh -d /oraclesw9i oracle
```

Step 5 Enter the following command to change the oracle user password:

```
passwd oracle
```

Enter the new password; then, re-enter the password to confirm it.

Step 6 Insert the CTM Server Disk 1 installation CD and enter the following command:

```
cd /cdrom/cdrom0/Disk1
```

Step 7 Enter the following command to list the files in the cdrom/cdrom0/Disk1 directory:

```
ls -laR
```



Note If a list of files is returned, it indicates that you can access the CD-ROM successfully. If no files are visible, or if an error message is returned, refer to Sun Solaris documentation for mounting the CD-ROM.

Step 8 Enter the following command to copy the default profile to the Oracle home directory:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/{small | medium | large | highend}/.cshrc
/oraclesw9i/.cshrc
```

For example, to copy the default profile for a small network, enter:

```
cp /cdrom/cdrom0/Disk1/InstData/Solaris/VM/cfg/small/.cshrc /oraclesw9i/.cshrc
```



Note If you installed Oracle Standard Edition, you must copy the default profile for a small network.

Step 9 Enter the following command to determine what type of applications you can run on your OS:

```
isainfo -kv
```

If the output reads “64-bit sparcv9 kernel modules,” you can run both 64-bit and 32-bit applications. If the output reads “32-bit sparcv9 kernel modules,” you can run only 32-bit applications.



Note It is recommended that you be able to run 64-bit applications.

Step 10 Complete one of the following options, depending on your Oracle version:



Note The Oracle patches 9.2.0.7 and 9.2.0.8 are available officially only for 64-bit. These patches are not available for 32-bit.

- If you are installing 64-bit Oracle Enterprise Edition and 9.2.0.7, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_64bit.rsp /oraclesw9i
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

- If you are installing 64-bit Oracle Standard Edition and 9.2.0.7, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_std_64bit.rsp /oraclesw9i
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

- If you are installing 64-bit Oracle and 9.2.0.8, you must download the Oracle installation response file from Cisco.com.

Go to <http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=278875317> (which requires a registered Cisco.com username and password) and download the patchset_64bit_9208.rsp file.

Then, complete one of the following options, depending on your Oracle version:

- If you are installing 64-bit Oracle Enterprise Edition and 9.2.0.8, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_64bit.rsp /oraclesw9i
```

Then, copy the downloaded patchset_64bit_9208.rsp file to /oraclesw9i.

- If you are installing 64-bit Oracle Standard Edition and 9.2.0.8, enter:

```
cp /cdrom/cdrom0/Disk1/svrcustom_std_64bit.rsp /oraclesw9i
```

Then, copy the downloaded patchset_64bit_9208.rsp file to /oraclesw9i.

Step 11 Enter the following commands to change ownership of the Oracle software directories:

```
/usr/bin/chown -R oracle:dba /oraclesw9i
/usr/bin/chown -R oracle:dba /db01
/usr/bin/chown -R oracle:dba /db02
/usr/bin/chown -R oracle:dba /db03
/usr/bin/chown -R oracle:dba /db04
/usr/bin/chown -R oracle:dba /db05
/usr/bin/chown -R oracle:dba /ctm_backup
```

Step 12 Enter the following commands to eject the CTM Server Disk 1 installation CD:

```
cd /
eject cdrom
```

Step 13 Enter the following commands to create a temporary staging area:

```
cd /
mkdir temp
chmod 777 /temp
```

Step 14 Enter the following command on both the database workstation and the server workstation:

```
vi /.cshrc
```

Step 15 Comment the “stty” statement from the /.cshrc file, if it exists.

Step 16 If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

```
/usr/openwin/bin/xhost +
```

2.2.5.2 Installing Oracle9i on the CTM Database Workstation



Note The C shell is assumed for all UNIX commands.

To install Oracle9i on the workstation where the CTM database will run:

Step 1 Enter the following command to log in as the oracle user:

```
su - oracle
```



Tip To verify the username, enter the **id** command.

Step 2 Insert disk one of the Oracle9i installation CDs in the CD-ROM drive.

Step 3 Enter the following command to set the display on your terminal:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 4 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 5 Depending on your Oracle version, complete one of the following options to start the Oracle Installer:

- If you are installing 64-bit Oracle Enterprise Edition, enter:

```
cd /cdrom/cdrom0
./runInstaller -silent -responseFile /oraclesw9i/svrcustom_64bit.rsp &
```

- If you are installing 64-bit Oracle Standard Edition, enter:

```
cd /cdrom/cdrom0
./runInstaller -silent -responseFile /oraclesw9i/svrcustom_std_64bit.rsp &
```

Step 6 At the Inventory Location screen, click **OK**.

Step 7 The Oracle Universal Installer screen appears and prompts you to run the /tmp/orainstRoot.sh script. Log into another terminal window as the root user and enter the following command:

```
cd /tmp/
```



Note The Installer does not prompt you to run the /tmp/orainstRoot.sh script if you have a previous version of Oracle installed on your workstation or if the /var/opt/oracle/oratab file already exists on your workstation.

Step 8 Enter the following command to run the orainstRoot.sh script:

```
./orainstRoot.sh
```

Step 9 Return to the Oracle Universal Installer screen and click **Continue**.



Note The Oracle Universal Installer process might take up to 5 minutes.

Step 10 The Disk Location dialog box prompts you for disk two of the Oracle9i installation CDs. Return to the terminal window where you ran the ./runInstaller command and press **Return** on your keyboard to bring up the command prompt.

Step 11 Enter the following command at the command prompt:

```
eject cdrom
```

Step 12 Remove disk one and insert disk two of the Oracle9i installation CDs.

Step 13 Minimize the terminal window.

Step 14 Return to the Disk Location dialog box and change the path to read:

```
/cdrom/cdrom0/disk2
```

Click **OK**.

Step 15 The Disk Location dialog box prompts you for disk three of the Oracle9i installation CDs. Return to the terminal window where you ran the ./runInstaller command and press **Return** on your keyboard to bring up the command prompt.

Step 16 Enter the following command at the command prompt:

```
eject cdrom
```

Step 17 Remove disk two and insert disk three of the Oracle9i installation CDs.

Step 18 Minimize the terminal window.

Step 19 Return to the Disk Location dialog box and change the path to read:

```
/cdrom/cdrom0/disk3
```

Click **OK**.

Step 20 You are prompted to run `/oraclesw9i/product/9.2/root.sh` from another window. Log into another terminal window as the root user and enter the following command:

```
cd /oraclesw9i/product/9.2
```

Step 21 Enter the following command to run the `root.sh` script:

```
./root.sh
```

Step 22 At the prompt for the local bin directory, enter the following path in the `root.sh` script:



Note The `/oraclesw9i/product/9.2/local/bin` directory must be created before running the `root.sh` script.

```
/oraclesw9i/product/9.2/local/bin
```

Step 23 Return to the Oracle Setup Privileges screen and click **OK**.

Step 24 Enter the following command to eject the CD:

```
eject cdrom
```

2.2.5.3 Downloading the 9.2.0.7 Patch for Oracle9i on the CTM Database Workstation

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.7 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                9.2.0.7.0
```

Step 1 Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.

Step 2 Click **Patches**.

Step 3 Click **Simple Search**.

Step 4 In the Search by Patch Number(s) field, enter **4163445**.

Step 5 In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

Step 6 Click **Go**.

Step 7 Click **Download**. Download **p4163445_92070_SOLARIS64.zip**.


Step 8 As the oracle user, save the patch to the `/oraclesw9i` directory.

Step 9 As the root user, enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4163445_92070_SOLARIS64.zip
```

2.2.5.4 Installing the 9.2.0.7 Patch for Oracle9i on the CTM Database Workstation

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

- Step 1** Enter the following command to log into the database workstation as the oracle user:
- ```
su - oracle
```
- Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:
- ```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
- Step 3** Enter the following command to verify that the display is set correctly:
- ```
echo $DISPLAY
```
- In the output, you should see:
- ```
<hostname_or_IP_address>:0.0
```
- Step 4** Enter the following commands to install the 9.2.0.7 patch:
- ```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9207.rsp
```
-  **Note** If the Disk Location screen pops up, click **Cancel**.
- 
- Step 5** At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:
- ```
cd /oraclesw9i/product/9.2
./root.sh
```
- Step 6** At the prompt for the local bin directory, enter the following path in the root.sh script:
- ```
/oraclesw9i/product/9.2/local/bin
```
- Step 7** The script asks if you would like to overwrite the existing files. Confirm the request.
- Step 8** After the script finishes running, return to the prompt popup window and click **OK**.
- Step 9** Click **Exit**.
- Step 10** Enter the following commands to remove the 9.2.0.7 patch installation files:
- ```
rm -rf /oraclesw9i/Disk1
rm -rf /oraclesw9i/p4163445_92070_SOLARIS64.zip
rm -rf /oraclesw9i/README.html
```
-

2.2.5.5 Downloading the 9.2.0.8 Patch for Oracle9i on the CTM Database Workstation

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.8 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                9.2.0.8.0
```

-
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.
 - Step 2** Click **Patches**.
 - Step 3** Click **Simple Search**.
 - Step 4** In the Search by Patch Number(s) field, enter **4547809**.
 - Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
 - Step 6** Click **Go**.
 - Step 7** Click **Download**. Download **p4547809_92080_SOLARIS64.zip**.
 - Step 8** As the oracle user, save the patch to the /oraclesw9i directory.
 - Step 9** As the root user, enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4547809_92080_SOLARIS64.zip
```

2.2.5.6 Installing the 9.2.0.8 Patch for Oracle9i on the CTM Database Workstation

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

-
- Step 1** Enter the following command to log into the database workstation as the oracle user:

```
su - oracle
```
 - Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
 - Step 3** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```


In the output, you should see:

```
<hostname_or_IP_address>:0.0
```
 - Step 4** Enter the following commands to install the 9.2.0.8 patch:

```
cd /oraclesw9i/Disk1
```

```
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9208.rsp
```



Note If the Disk Location screen pops up, click **Cancel**.

Step 5 At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

Step 6 At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

Step 7 The script asks if you would like to overwrite the existing files. Confirm the request.

Step 8 After the script finishes running, return to the prompt popup window and click **OK**.

Step 9 Click **Exit**.

Step 10 Enter the following commands to remove the 9.2.0.8 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm /oraclesw9i/p4547809_92080_SOLARIS64.zip
rm /oraclesw9i/README.html
```

2.2.5.7 Downloading the Oracle Patch Installer on the CTM Database Workstation (Required Only for 9.2.0.7)

The Oracle patch installer is used with 9.2.0.7 to install additional Oracle patches. If you have already installed the Oracle patch installer or if you are using the 9.2.0.8 patch, you can skip this section.

You must log in as an oracle UNIX user to download and unzip files.

Step 1 Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.

Step 2 Click **Patches**.

Step 3 Click **Simple Search**.

Step 4 In the Search by Patch Number(s) field, enter **2617419**.

Step 5 In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

Step 6 Click **Go**.

Step 7 Click **Download**.

Step 8 In the list of patches returned, click the first patch, which has the latest release number.



Note Do not be concerned if the patch refers to a later version of Oracle.

Step 9 In the Patch 2617419 window, go to the Platform or Language field and choose **Generic Platform** (the default).

Step 10 Click **Download**.

Step 11 Save the patch to the /oraclesw9i/product/9.2 directory.

Step 12 Enter the following commands to change the patch ownership and unzip the patch:

```
chown oracle:dba /oraclesw9i/product/9.2/p2617419_10102_GENERIC.zip
cd /oraclesw9i/product/9.2
unzip p2617419_10102_GENERIC.zip
```

2.2.6 Updating the System Parameters on the CTM Database Workstation

**Note**

The C shell is assumed for all UNIX commands.

To update the system parameters, log in as the root user on the workstation where the CTM database will run and complete the following steps:

Step 1 If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 2 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 3 Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0_06 on your workstation.

**Note**

If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.

**Note**

If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

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Wait for up to 60 seconds while the following message appears:

Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your system. This may take a moment...

Step 4 Click **Next** at the Introduction screen.

Step 5 At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

Step 6 At the Installation Options screen, choose **New installation**; then, click **Next**.

Step 7 At the Select Products to install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.



Note

The Web Server check box is selected automatically when you choose Cisco Transport Manager server. The web server allows you to use an HTTP connection to download files from the CTM server to the CTM client. The web server is also used to launch the online help. The web server is required for the CTM server.



Note

The license for CTM GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install CTM GateWay/CORBA when you install the CTM server; however, this section assumes that you are installing the two products separately. For more information, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#)



Note

The license for CiscoView (an optional application used by CTM to configure and monitor ONS 155xx NEs) is sold separately if used to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx. If you are using this feature in a production environment to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx, you must purchase a license for LAN Management Solution (LMS) Release 2.5, which includes CiscoView.

The license for CiscoView is bundled with CTM if used to manage the ONS 15501 DC or AC. You do not need to purchase a separate CiscoView license to manage the ONS 15501 DC or AC.

Step 8 At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.

- Optical Module: ONS 15xxx (inc. shelf controller)
- Cisco MGX Voice Gateway
- IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
- IOS Module: Cisco 7600
- All of the Above Modules



Note

- The MDS 9000 module is a common module that will be installed with any selection.
- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.

Step 9 At the Main Options screen, check only the **Check system settings** check box; then, click **Next**.



Caution Do not check the other check boxes on the Main Options screen. You will check the other options during the next phase of the installation.

Step 10 At the Select Network Configuration screen, specify the size of your network; then, click **Next**.



Note If you installed Oracle Standard Edition, you can only choose **Small**.

Step 11 At the Update the System Parameters screen, check only the **Optimize CTM database parameters** check box; then, click **Next**.

Step 12 At the warning prompt, click **Exit Setup** and enter the following command to reboot the system:

```
init 6
```

Step 13 (Optional) If you plan to perform a database backup on the remote database setup, you must add an entry for the root user to the `/.rhosts` file on the database server. Enter the following commands to modify the `/.rhosts` file:

```
$ cat >> /.rhosts << EOF
<server_name> root
EOF
```

where `<server_name>` is the hostname of the server workstation.

2.2.7 Installing the CTM R8.0 Database



Note

- The C shell is assumed for all UNIX commands.
- Before installing the CTM R8.0 database, verify that Oracle9i is installed in the `/oraclesw9i` directory.

To install the CTM R8.0 database, log in as the root user on the workstation where the CTM database will run and complete the following steps:

Step 1 If you are using an xterm window or a remote host, enter the following command to set the `DISPLAY` variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 2 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 3 To install CTM, the remote shell (`rsh`) must be enabled. Enter the following command to verify whether `rsh` is enabled:

```
rsh <IP_address_of_CTM_server> ls
```

If an error is returned, you must open a shell on the CTM server workstation and edit the `/.rhosts` file. As the root user, enter the following commands to modify the `/.rhosts` file:

```
# cat >> /.rhosts << EOF
<database_workstation_name> root
EOF
```

where `<database_workstation_name>` is the hostname of the CTM database workstation.

Step 4 Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your
system. This may take a moment...
```

Step 5 Click **Next** at the Introduction screen.

Step 6 At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

Step 7 At the Installation Options screen, choose **New installation**; then, click **Next**.

Step 8 At the Select Products to Install screen, check only the **Cisco Transport Manager server** check box. The Web Server check box is selected by default. Click **Next**.

Step 9 At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.

- Optical Module: ONS 15xxx (inc. shelf controller)
- Cisco MGX Voice Gateway
- IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
- IOS Module: Cisco 7600
- All of the Above Modules



Note

- The MDS 9000 module is a common module that will be installed with any selection.
- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.

Step 10 At the Main Options screen, check only the **Create CTM database** check box and specify the Oracle SID. (The default is `CTM`.) Click **Next**.



Caution

Make sure to uncheck the other check boxes on the Main Options screen.

Step 11 At the Select Network Configuration screen, specify the size of your network; then, click **Next**.



Note

If you installed Oracle Standard Edition, you can only choose **Small**.

Step 12 At the CTM Group Information & Sudo Installation screen, confirm the name of the UNIX group to which you want to assign administrator privileges. Check or uncheck the Install CTM Sudo check box. Click **Next**.

Step 13 (For optical and Cisco 7600 modules only) At the FTP Information screen, accept the default values; then, click **Next**.

Step 14 At the Server IP Address screen, accept the default value and click **Next**.



Note If you are installing the MGX module, you are prompted for the hostname, which is editable.

Step 15 At the Database Information screen, specify the IP address of the database workstation and specify whether or not you want to install the database in ARCHIVELOG mode. Click **Next**.

Step 16 At the Specify CTM Server IP to connect screen, specify either the hostname or the IP address of the workstation on which the CTM server is installed. Click **Next**.



Note If you entered a hostname, the setup program automatically translates the hostname to a physical IP address and prompts you to confirm the address. Click **Yes**.

Step 17 At the CTM Database Installation Directories screen, the setup program verifies that the directories exist as recommended in [Table 2-2](#). Click **Next**.

Step 18 At the Pre-Installation Summary screen, click **Install** to create the CTM database.

Step 19 The Install Complete screen summarizes the results of the installation. Click **Done**.

Step 20 Enter the following command to verify that the Oracle9i database and listener are running:

```
ps -ef | grep ora
```

The output displays tnslsnr and ora_[...]<Oracle_SID> processes.

2.2.8 Verifying the Oracle9i Client Installation on the CTM Server Workstation and Starting the CTM Server

Log in as the root user on the workstation where the CTM server is installed and complete the following steps:

Step 1 Enter the following command to log in as the oracle user:

```
su - oracle
```

Step 2 Enter the following command to verify that the Oracle9i database can connect to the CTM server:

```
tnsping <Oracle_SID>
```



Note The default Oracle SID is *CTM*.

You should receive the following reply:

```
Attempting to contact (DESCRIPTION = (ADDRESS = (PROTOCOL= TCP) (Host=
<IP_address_where_database_is_running>) (Port= 1521)) (
CONNECT_DATA = (SID = <ORACLE_SID>)))
OK (0 msec)
```



Note The value can be greater than 0.

- Step 3** Log out from the oracle user and enter the following command to return to the shell as the root user:
- ```
exit
```
- Step 4** Enter the following command to reboot the system. The CTM server starts automatically after rebooting:
- ```
init 6
```
- Step 5** To verify that the CTM R8.0 server is running, enter the **showctm** command after the server reboots. The **showctm** command displays the CTM server version running as 8.0, followed by the build number. In the output, you will see two instances of “CTM Server,” “SnmpTrapService,” “SMService,” and “Apache Web Server.” This indicates that the CTM server is running. You should also see NE-specific processes, depending on your network. You might also see CTM GateWay/CORBA and CTM GateWay/TL1 instances.
- Step 6** If the following error is returned on the command prompt for the web server:
- ```
(125)Address already in use: make_sock: could not bind to address <IP_address> no listening sockets available, shutting down
```

Complete the following substeps:

- a. Enter the following command on the server workstation; then, kill the processes listed:
 

```
ps -ef | grep httpd | grep CiscoTransportManagerServer | grep -v grep
```
  - b. Enter the following command to shut down the CTM server:
 

```
ctms-stop
```
  - c. Restart the CTM server (this restarts the latest installed web server).
- 

## 2.3 Setting Up Sudo

As described in [1.4.1 Overview of Sudo Commands, page 1-19](#), the CTM server installation includes installation of the UNIX sudo command. This command allows nonroot users who belong to the UNIX group specified during installation to run certain CTM administrative commands. For security reasons, the installed sudo command **setuid** is disabled by default. You must enable setuid on the sudo command in order for it to work.




---

**Note** Sudo is often available in the standard UNIX environment established by the CTM server system administrator. If so, it is not necessary to use the sudo bundled with CTM or follow this procedure to enable it. Instead, you can use the sudo established by the system administrator.

---

To enable setuid:

---

- Step 1** Log into the CTM server as the root user and enter the following command:
- ```
chmod 4111 /opt/CiscoTransportManagerServer/admin/sudo/sudo
```

Step 2 Verify that users have `/opt/CiscoTransportManagerServer/admin/sudo` in their path environment, so that they can execute `sudo` without having to specify the full path.



Note After the CTM R8.0 installation is complete, you have the option of upgrading the CTM network configuration size and adding new modules. For more information, see [3.5 Upgrading the CTM Network Configuration Size, page 3-37](#) and [3.6 Adding New Modules, page 3-37](#).



CHAPTER 3

Upgrading to CTM R8.0 from an Earlier Release

This chapter describes how to upgrade to CTM R8.0 from an earlier release. This chapter contains the following sections:

- [3.1 Upgrading from CTM R7.0 or CTM R7.2 to CTM R8.0 and Oracle9i on the Same Workstation, page 3-2](#)
- [3.2 Upgrading from CTM R7.0 or CTM R7.2 to CTM R8.0 and Oracle9i on Separate Workstations, page 3-16](#)
- [3.3 Verifying that the Oracle9i and CTM Server Processes Are Running, page 3-35](#)
- [3.4 Setting Up Sudo, page 3-36](#)
- [3.5 Upgrading the CTM Network Configuration Size, page 3-37](#)
- [3.6 Adding New Modules, page 3-37](#)



Note

After upgrading to CTM R8.0, the old CTM server directory is moved to `CiscoTransportManagerServer-old`. Any data previously saved under `/opt/CiscoTransportManagerServer/admin`, `/opt/CiscoTransportManagerServer/images`, `/opt/CiscoTransportManagerServer/cms`, `/opt/CiscoTransportManagerServer/bin/jcorbagw.sh`, `/opt/CiscoTransportManagerServer/cfg/usr`, and `/opt/CiscoTransportManagerServer/cfg/corbagw.properties` is saved under the new directory. Before removing the old version, move any relevant data to the new `/opt/CiscoTransportManagerServer` directory.



Caution

When migrating data, the migration could stall if the `/temp` directory contains temporary files left over from previous upgrades. Remove all temporary files from `/temp` before upgrading CTM.



Caution

Before upgrading to CTM R8.0, verify that the NE versions in your network are supported by CTM R8.0. See the [Release Notes for Cisco Transport Manager Release 8.0](#) for the NE software versions that are supported. If your network contains NEs that are not supported in CTM R8.0, it will not be possible to discover or manage them.



Note

For an explanation of error messages that you might encounter during the upgrade, see [Appendix A, “Understanding Installation Error Messages.”](#)

**Note**

If you need instructions to mount or unmount CDs, see [Appendix C, “Mounting and Unmounting CDs on Sun Solaris.”](#)

After the upgrade is complete, you can delete `/opt/CiscoTransportManagerServer.oldCTM` and also the install location it points to (if it is a link) because the new server `/opt/CiscoTransportManagerServer` is now installed.

If you cancelled the upgrade you should:

-
- Step 1** Delete the new CTM server that was installed—`/opt/CiscoTransportManagerServer`—as well as the install location it points to. The new server installation might not be complete.
 - Step 2** Delete `/opt/CiscoTransportManagerServer.oldCTM` and create a new `/opt/CiscoTransportManagerServer` (if it is a link) that points to the same old install location. Alternately, rename `/opt/CiscoTransportManagerServer.oldCTM` to `/opt/CiscoTransportManagerServer` (if it is a directory).
 - Step 3** Reimport the database.
 - Step 4** Check the database version in the `/opt/newdbinfo` file. The database version should be the old CTM release (that is, CTM R7.0 or R7.2).
 - Step 5** Proceed with the upgrade.
-

3.1 Upgrading from CTM R7.0 or CTM R7.2 to CTM R8.0 and Oracle9i on the Same Workstation

This section describes how to upgrade from CTM R7.0 or CTM R7.2 to CTM R8.0 when you are installing the CTM R8.0 server and the Oracle9i database, and migrating from Sun Solaris 8 to Sun Solaris 10.

**Note**

The C shell is assumed for all UNIX commands.

3.1.1 Backing Up the Database on Solaris 8 Before Migration

Before upgrading the database to CTM R8.0, it is strongly recommended that you back up the existing database. This ensures that you can revert to the old data in the event that the upgrade fails.

To back up CTM, refer to the following sections in Chapter 4 of the [Cisco Transport Manager Release 8.0 User Guide](#):

- Backing Up the CTM Database from the CTM GUI
- Backing Up the CTM Database from the CLI

3.1.2 Solaris Migration from Sun Solaris 8 to Sun Solaris 10

-
- Step 1** Before upgrading to Solaris 10, verify that your root directory has enough space. A minimum of 6 GB of free root space must be available.
- Step 2** Enter the **stop + a** sequence to halt the workstation at the boot prompt.
- Step 3** At the OK prompt, enter the following command:
- ```
boot cdrom
```
- Step 4** Insert the Solaris 10 media for installation.
- Step 5** The workstation reboots and you are prompted to enter values for system identification.
- Step 6** When prompted, select the Upgrade Installation feature. Continue the OS upgrade using the default values.
- Step 7** After the OS upgrade is complete, relink the Oracle database and any other Oracle tools or programs. Enter the following command to relink the Oracle database:
- ```
$ORACLE_HOME/bin/relink all
```

When you upgrade the OS, the version of OS-level utilities (such as Motif and the C compiler) might change. Relinking Oracle and your other products ensures that the database and tools use libraries and utilities that are currently on the system. Refer to the Oracle documentation to relink the Oracle database and tools.

3.1.3 Downloading the 9.2.0.7 Patch for Oracle9i

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.7 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                9.2.0.7.0
```

-
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.



Note This website is Copyright © 2004, Oracle Corporation. All rights reserved.

- Step 2** Click **Patches**.
- Step 3** Click **Simple Search**.
- Step 4** In the Search by Patch Number(s) field, enter **4163445**.
- Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

- Step 6** Click **Go**.
- Step 7** Click **Download**. Download **p4163445_92070_SOLARIS64.zip**.
- Step 8** As the oracle user, save the patch to the /oraclesw9i directory and enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4163445_92070_SOLARIS64.zip
```

3.1.4 Copying the .rsp Response File Provided by Cisco

If you already have the 9.2.0.7 patch for Oracle9i installed, you can skip this section.

- Step 1** Insert the CTM Server Disk 1 installation CD and enter the following command:

```
cd /cdrom/cdrom0/Disk1
```

- Step 2** Enter the following command to list the files in the cdrom/cdrom0/Disk1 directory:

```
ls -laR
```



Note If a list of files is returned, it indicates that you can access the CD-ROM successfully. If no files are visible, or if an error message is returned, refer to Sun Solaris documentation for mounting the CD-ROM.

- Step 3** As the oracle user, enter the following command to copy the .rsp Response file provided by Cisco:

```
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

3.1.5 Installing the 9.2.0.7 Patch for Oracle9i

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

- Step 1** Enter the following command to log into the database workstation as the oracle user:

```
su - oracle
```

- Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

- Step 3** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 4 Enter the following command to stop the Oracle listener:

```
lsnrctl stop
```

Step 5 Enter the following commands to shut down the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> shutdown immediate
SQL> exit
```

Step 6 Enter the following commands to install the 9.2.0.7 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9207.rsp
```



Note If the Disk Location screen pops up, click **Cancel**.

Step 7 At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

Step 8 At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

Step 9 The script asks if you would like to overwrite the existing files. Confirm the request.

Step 10 After the script finishes running, return to the prompt popup window and click **OK**.

Step 11 Click **Exit**.

Step 12 Enter the following commands to start the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> startup
SQL> exit
```

Step 13 Enter the following command to start the Oracle listener:

```
lsnrctl start
```

Step 14 Enter the following commands to remove the 9.2.0.7 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm /oraclesw9i/p4163445_92070_SOLARIS64.zip
rm /oraclesw9i/README.html
```

3.1.6 Downloading the 9.2.0.8 Patch for Oracle9i

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.8 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                               9.2.0.8.0
```

-
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.
 - Step 2** Click **Patches**.
 - Step 3** Click **Simple Search**.
 - Step 4** In the Search by Patch Number(s) field, enter **4547809**.
 - Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
 - Step 6** Click **Go**.
 - Step 7** Click **Download**. Download **p4547809_92080_SOLARIS64.zip**.
 - Step 8** As the oracle user, save the patch to the /oraclesw9i directory and enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4547809_92080_SOLARIS64.zip
```

3.1.7 Copying the .rsp Response File Provided by Cisco

If you already have the 9.2.0.8 patch for Oracle9i installed, you can skip this section.

-
- Step 1** If you are installing 9.2.0.8, you must download the Oracle installation response file from Cisco.com. Go to <http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=278875317> (which requires a registered Cisco.com username and password) and download the patchset_64bit_9208.rsp file.
 - Step 2** As oracle user, copy the downloaded patchset_64bit_9208.rsp file to /oraclesw9i.
-

3.1.8 Installing the 9.2.0.8 Patch for Oracle9i

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

Step 1 Enter the following command to log into the database workstation as the oracle user:

```
su - oracle
```

Step 2 If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 3 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 4 Enter the following command to stop the Oracle listener:

```
lsnrctl stop
```

Step 5 Enter the following commands to shut down the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> shutdown immediate
SQL> exit
```

Step 6 Enter the following commands to install the 9.2.0.8 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9208.rsp
```



Note If the Disk Location screen pops up, click **Cancel**.

Step 7 At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

Step 8 At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

Step 9 The script asks if you would like to overwrite the existing files. Confirm the request.

Step 10 After the script finishes running, return to the prompt popup window and click **OK**.

Step 11 Click **Exit**.

Step 12 Enter the following commands to start the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> startup
SQL> exit
```

Step 13 Enter the following command to start the Oracle listener:

```
lsnrctl start
```

Step 14 Enter the following commands to remove the 9.2.0.8 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm /oraclesw9i/p4547809_92080_SOLARIS64.zip
rm /oraclesw9i/README.html
```

3.1.9 Post-Installation Steps for 9.2.0.7 or 9.2.0.8—When Upgrading Your CTM Server Installation

Complete the steps detailed in this section after you install the Oracle 9.2.0.7 or 9.2.0.8 patches for the Solaris operating system (SPARC 64-bit).

Step 1 Enter the following command to log into the database workstation as the Oracle user:

```
su - oracle
```

Step 2 For single-instance installations, enter the following command to start the listener:

```
lsnrctl start
```

Step 3 For single-instance installations, use SQL*Plus to log into the database as the SYS user with SYSDBA privileges. Enter the following commands:

```
sqlplus /nolog
SQL> CONNECT SYS/SYS_password AS SYSDBA
SQL> SHUTDOWN
```

Step 4 Enter the following SQL*Plus commands:

```
SQL> STARTUP MIGRATE
SQL> SPOOL patch.log
SQL> @?/rdbms/admin/catpatch.sql
SQL> SPOOL OFF
```



Note The patch.log file is created in the current directory where the SQL commands above were executed.

Step 5 Review the patch.log file for errors and inspect the list of components that are displayed at the end of the catpatch.sql script. This list provides the version and status of each server component in the database.

Step 6 If necessary, rerun the catpatch.sql script after correcting any problems.

Step 7 Enter the following commands to restart the database:

```
SQL> SHUTDOWN
SQL> STARTUP
```

Step 8 Run the utlrp.sql script to recompile all invalid PL/SQL packages now instead of when the packages are accessed for the first time. This step is optional but recommended.

```
SQL> @?/rdbms/admin/utlrp.sql
SQL> exit
```



Note Step 9 should be executed for Oracle patch version 9.2.0.8 only.

- Step 9** By default, all new files and directories are created with restricted access during the patch set installation. Users or third party applications with a group identifier that is different from the database will see permission errors when they try to access client utilities or libraries in the database home.
- Complete the following substeps to change the user permissions:
- a. Enter the following command to change to the install directory:

```
cd $ORACLE_HOME/install
```
 - b. Run changePerm.sh and specify the patched server Oracle home location before accessing the client utilities or libraries.
-

3.1.10 Downloading the Oracle Patch Installer (Required Only for 9.2.0.7)

The Oracle patch installer is used with 9.2.0.7 to install additional Oracle patches. If you have already installed the Oracle patch installer or if you are using the 9.2.0.8 patch, you can skip this section.

You must log in as an oracle UNIX user to download and unzip files.

-
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.
- Step 2** Click **Patches**.
- Step 3** Click **Simple Search**.
- Step 4** In the Search by Patch Number(s) field, enter **2617419**.
- Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
- Step 6** Click **Go**.
- Step 7** Click **Download**.
- Step 8** In the list of patches returned, click the first patch, which has the latest release number.



Note Do not be concerned if the patch refers to a later version of Oracle.

- Step 9** In the Patch 2617419 window, go to the Platform or Language field and choose Generic Platform (the default).
- Step 10** Click **Download**.
- Step 11** Save the patch to the /oraclesw9i/product/9.2 directory.
- Step 12** Enter the following commands to change the patch ownership and unzip the patch:

```
chown oracle:dba /oraclesw9i/product/9.2/p2617419_10102_GENERIC.zip
cd /oraclesw9i/product/9.2
unzip p2617419_10102_GENERIC.zip
```

3.1.11 Installing the CTM R8.0 Server and Upgrading the Database



Note The C shell is assumed for all UNIX commands.

To install the CTM server and upgrade the database, log in as the root user and complete the following steps:

- Step 1** Enter the following command to verify that the CTM R8.0 server is running:
- ```
showctm
```
- Step 2** If the CTM server is running, enter the following command to stop the CTM server before performing the upgrade:
- ```
ctms-abort
```
- Step 3** If you are upgrading from CTM R7.0, install the latest CTM R7.0 service pack. If you are upgrading from CTM R7.2, install the latest CTM R7.2 service pack. See the [Migration Matrix for CTM Service Pack Releases](#) for more information.
- Step 4** Enter the following commands:
- ```
cd /opt/CiscoTransportManagerServer/patch/migration/8.0.0
./pre_migration.sh
cd /
```
- Step 5** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:
- ```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
- Step 6** Enter the following command to verify that the display is set correctly:
- ```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

- Step 7** Insert the CTM Server Disk 1 installation CD and enter the following commands:
- ```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0_06 on your workstation.



Note If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.

**Note**

If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

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Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your system. This may take a moment...
```

- Step 8** Click **Next** at the Introduction screen.
- Step 9** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 10** At the Installation Options screen, choose **Upgrade from existing CTM release**; then, click **Next**.

**Note**

If your network size is medium or large, you can also choose **Upgrade CTM network configuration size**. (Small or high-end network sizes cannot be upgraded.) Alternately, you can upgrade the network size as a separate step; see [3.5 Upgrading the CTM Network Configuration Size](#), page 3-37.

- Step 11** At the Select Products to Install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.

**Note**

The Web Server check box is selected automatically when you choose Cisco Transport Manager server. The web server allows you to use an HTTP connection to download files from the CTM server to the CTM client. The web server is also used to launch the online help. The web server is required for the CTM server.

**Caution**

Do not check the other check boxes on the Select Products to Install screen.

**Note**

The license for CTM GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install CTM GateWay/CORBA when you install the CTM server; however, this section assumes that you are installing the two products separately. For more information, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#)

**Note**

If the CTM GateWay/CORBA check box is disabled and checked, due to a previous installation, installation is mandatory during the upgrade. If the CTM GateWay/CORBA check box is disabled and unchecked, do not attempt installation during the upgrade.



Note The license for CiscoView (an optional application used by CTM to configure and monitor ONS 155xx NEs) is sold separately if used to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx. If you are using this feature in a production environment to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx, you must purchase a license for LAN Management Solution (LMS) Release 2.5, which includes CiscoView.

The license for CiscoView is bundled with CTM if used to manage the ONS 15501 DC or AC. You do not need to purchase a separate CiscoView license to manage the ONS 15501 DC or AC.

Step 12 At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.

- Optical Module: ONS 15xxx (inc. shelf controller)
- Cisco MGX Voice Gateway
- IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
- IOS Module: Cisco 7600
- All of the Above Modules



Note

- The MDS 9000 module is a common module that will be installed with any selection.
- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.
- Because the Cisco 7600 module is not supported in CTM R7.0 but is supported in CTM R7.2, it will always be disabled if you are upgrading from CTM R7.0. The Cisco 7600 module will be enabled for CTM R7.2 if it was previously installed. To add this module, see [3.6 Adding New Modules, page 3-37](#).

Step 13 At the Main Options screen, complete the following substeps:

- a. Check the **Upgrade CTM database** check box.
- b. Check the **Install CTM server** check box.
- c. Click **Next**.

Step 14 (Optional) If you selected **Upgrade CTM network configuration size** in [Step 10](#), the Select to Upgrade Network Configuration Type screen appears. Select the option to upgrade your current network configuration type.

Step 15 (Optional) At the Select Network Configuration screen, select which of the following available network configuration types you want to upgrade:

- Large
- High end



Note This screen is displayed only if you selected the Upgrade Network Configuration Type option in the previous step.

Step 16 At the CTM Group Information & Sudo Installation screen, complete the following substeps:

- a. Enter the name of the UNIX group to which you want to assign administrator privileges.
- b. To install sudo, check the **Install CTM Sudo** check box. If you do not want to install sudo, uncheck the check box.

- c. Click **Next**.



Note For information about the sudo feature, see [1.4.1 Overview of Sudo Commands, page 1-19](#).

Step 17 (For optical and Cisco 7600 modules only) At the FTP Information screen, complete the following substeps to configure an FTP account for software download operations:

- a. Enter the following information:
 - FTP username
 - FTP user password
 - Confirm FTP user password
 - FTP directory
- b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the CTM server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the CTM server workstation.
- c. Click **Next**.



Note The FTP information that you enter during the CTM server installation can be modified later from the CTM client Control Panel window. See the [Cisco Transport Manager Release 8.0 User Guide](#) for more information.

Step 18 At the Server IP Address screen, specify an IP address for the CTM server. The Hostname field is automatically populated with the hostname of the selected IP address. After confirming the IP address and hostname details, click **Next**.



Note The hostname is available only if you select Cisco MGX Voice Gateway.

Step 19 (For optical, IOS XR, and Cisco 7600 modules only) At the Configure TFTP Server screen, complete the following substeps if you want to enable TFTP:

- a. Check the **Enable TFTP Server** check box.
- b. Enter the TFTP directory name. The default is /tftpboot.
- c. Click **Next**.

Step 20 At the Destination Folder screen, specify where you want to install the CTM server. The default directory is /opt/CiscoTransportManagerServer. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.



Note If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.



Note Do not specify any mount point as the target installation directory for the server installation, or the installation data might be lost when the workstation restarts.

**Caution**

CTM checks for the `/opt/CiscoTransportManagerServer` directory or a symbolic link to it. If CTM cannot find the `/opt/CiscoTransportManagerServer` directory or a symbolic link, CTM creates a symbolic link automatically. Therefore, do not delete any instances of `/opt/CiscoTransportManagerServer` from your CTM file structure.

Step 21 The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.

**Note**

It might take 30 to 60 minutes or longer to install the CTM server and upgrade the database, depending on your system performance.

Step 22 At the Insert New Media screen, complete the following substeps:

- a. Eject the CTM Server Disk 1 installation CD, insert the CTM Server Disk 2 installation CD, and click **Browse**.
- b. The Select a Folder dialog box opens. Double-click **cdrom**; then, single-click **cdrom0**. The filename text box now reads `/cdrom/cdrom0`.
- c. In the Select a Folder dialog box, click **Select**.
- d. In the Insert New Media screen, click **OK**.
- e. Eject the CTM Server Disk 2 installation CD, insert the CTM Server Disk 3 installation CD, and click **Browse**.
- f. The Select a Folder dialog box opens. Double-click **cdrom**; then, single-click **cdrom0**. The filename text box now reads `/cdrom/cdrom0`.
- g. In the Select a Folder dialog box, click **Select**.
- h. In the Insert New Media screen, click **OK**.

Step 23 The Web Server Installation Summary screen summarizes the results of the web server installation. Click **Next**.

Step 24 The Install Complete screen summarizes the results of the installation. Click **Next**.

Step 25 The Upgrade Server and Database Complete screen displays the log location. Click **Done**.

Step 26 Enter the following commands:

```
cd /opt/CiscoTransportManagerServer.oldCTM/patch/migration/8.0.0
./post_migration.sh
cd /
```

Step 27 Enter the following command to reboot the system. The CTM server starts automatically after rebooting:

**Caution**

After you click the Done button in the installation GUI, the background processes continue to run for several minutes. Before rebooting, you must wait for the reboot message on the terminal where you started the installation. Depending on the server performance, the background processes can take up to 15 minutes before the reboot message appears. Rebooting the server before this message appears will break CTM functionalities.

```
init 6
```

Step 28 To verify that the CTM R8.0 server is running, enter the **showctm** command after the server reboots. The **showctm** command displays the CTM server version running as 8.0, followed by the build number. In the output, you will see two instances of “CTM Server,” “SnmpTrapService,” “SMService,” and “Apache

Web Server.” This indicates that the CTM server is running. You should also see NE-specific processes, depending on your network. You might also see CTM GateWay/CORBA and CTM GateWay/TL1 instances.

3.1.12 Copying the Client Upgrade Files After the CTM Server Installation

You have two options for upgrading each client installation to the latest version of CTM that is on the server. You can choose to:

- Manually upgrade each client installation. If you have a previously installed version of the CTM client, you must delete the directory where the previous client is installed before installing the CTM R8.0 client. See [5.1 Installing the CTM Client and Cisco Edge Craft on Microsoft Windows, page 5-2](#) or [5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris, page 5-7](#) for more information.
- Automatically upgrade each client when it connects to a server. During login, if the CTM client software version is older than the CTM server software version, the client will be prompted for upgrade. See [5.2 Starting the CTM Client in Microsoft Windows, page 5-5](#) or [5.5 Starting the CTM Client in Sun Solaris, page 5-9](#) for more information.

For this option you must copy the client installation files to the server. The CTM client and server installation files reside on separate installation CDs. To copy the client installation files to the server, you must eject the CTM server CD, insert the CTM client CD, and run an automated script, `CopyUpgradeFiles.sh`, to copy the client installation files to a specific folder under the CTM server installation directory. To do this, log in as the root user and complete the following steps.



Note

The CTM server must be installed before completing the following steps.

Step 1 Enter the following commands to eject the CTM server installation CD:

```
cd /
eject cdrom
```

Step 2 Insert the CTM client Solaris installation CD and enter the following command:

```
/cdrom/cdrom0/ctmc/CopyUpgradeFiles.sh
```

You should see the following output:

```
Copying the client upgrade files can take several minutes.
Copying CTM Client upgrade files...
Copying Solaris client upgrade files
Solaris client upgrade files copied
Please insert CTM client Windows CD to CD ROM, Copy will continue in 60 seconds...
Could not find Window Client CD, Please insert CTM client Windows CD to continue
Copy will continue in 300 seconds...
Copying Windows client upgrade files
Done...All upgrade files have been copied to server successfully!
Please hit Enter key to return to the prompt mode
```



Note This operation will occupy 800 MB of disk space.

3.2 Upgrading from CTM R7.0 or CTM R7.2 to CTM R8.0 and Oracle9i on Separate Workstations

This section describes how to upgrade from CTM R7.0 or CTM R7.2 to CTM R8.0 when you are installing the CTM R8.0 server and the Oracle9i database on separate Sun Solaris 10 servers.



Note The C shell is assumed for all UNIX commands.

3.2.1 Backing Up the Database on Solaris 8 Before Migration

Before upgrading the database to CTM R8.0, it is strongly recommended that you back up the existing database. This ensures that you can revert to the old data in the event that the upgrade fails.

To back up CTM, refer to the following sections in Chapter 4 of the [Cisco Transport Manager Release 8.0 User Guide](#):

- Backing Up the CTM Database from the CTM GUI
- Backing Up the CTM Database from the CLI

3.2.2 Solaris Migration from Sun Solaris 8 to Sun Solaris 10

-
- Step 1** Before upgrading to Solaris 10, verify that your root directory has enough space. A minimum of 6 GB of free root space must be available.
- Step 2** Enter the **stop + a** sequence to halt the workstation at the boot prompt.
- Step 3** At the OK prompt, enter the following command:
- ```
boot cdrom
```
- Step 4** Insert the Solaris 10 media for installation.
- Step 5** The workstation reboots and you are prompted to enter values for system identification.
- Step 6** When prompted, select the Upgrade Installation feature. Continue the OS upgrade using the default values.
- Step 7** After the OS upgrade is complete, relink the Oracle database and any other Oracle tools or programs. Enter the following command to relink the Oracle database:
- ```
$ORACLE_HOME/bin/relink all
```

When you upgrade the OS, the version of OS-level utilities (such as Motif and the C compiler) might change. Relinking Oracle and your other products ensures that the database and tools use libraries and utilities that are currently on the system. Refer to the Oracle documentation to relink the Oracle database and tools.

3.2.3 Downloading the 9.2.0.7 Patch for Oracle9i

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.7 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/  
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                9.2.0.7.0
```

-
- Step 1** Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.



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- Step 2** Click **Patches**.
- Step 3** Click **Simple Search**.
- Step 4** In the Search by Patch Number(s) field, enter **4163445**.
- Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
- Step 6** Click **Go**.
- Step 7** Click **Download**. Download **p4163445_92070_SOLARIS64.zip**.
- Step 8** As the oracle user, save the patch to the /oraclesw9i directory and enter the following commands to prepare the patch set:

```
cd /oraclesw9i  
unzip p4163445_92070_SOLARIS64.zip
```

3.2.4 Copying the .rsp Response File Provided by Cisco

If you already have the 9.2.0.7 patch for Oracle9i installed, you can skip this section.

- Step 1** Insert the CTM Server Disk 1 installation CD and enter the following command:

```
cd /cdrom/cdrom0/Disk1
```

Step 2 Enter the following command to list the files in the `cdrom/cdrom0/Disk1` directory:

```
ls -laR
```



Note If a list of files is returned, it indicates that you can access the CD-ROM successfully. If no files are visible, or if an error message is returned, refer to Sun Solaris documentation for mounting the CD-ROM.

Step 3 As the oracle user, enter the following command to copy the `.rsp` Response file provided by Cisco:

```
cp /cdrom/cdrom0/Disk1/patchset_64bit_9207.rsp /oraclesw9i
```

3.2.5 Installing the 9.2.0.7 Patch for Oracle9i

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

Step 1 Enter the following command to log into the database workstation as the oracle user:

```
su - oracle
```

Step 2 If you are using an xterm window or a remote host, enter the following command to set the `DISPLAY` variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 3 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 4 Enter the following command to stop the Oracle listener:

```
lsnrctl stop
```

Step 5 Enter the following commands to shut down the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> shutdown immediate
SQL> exit
```

Step 6 Enter the following commands to install the 9.2.0.7 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9207.rsp
```



Note If the Disk Location screen pops up, click **Cancel**.

Step 7 At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

Step 8 At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

Step 9 The script asks if you would like to overwrite the existing files. Confirm the request.

Step 10 After the script finishes running, return to the prompt popup window and click **OK**.

Step 11 Click **Exit**.

Step 12 Enter the following commands to start the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> startup
SQL> exit
```

Step 13 Enter the following command to start the Oracle listener:

```
lsnrctl start
```

Step 14 Enter the following commands to remove the 9.2.0.7 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm /oraclesw9i/p4163445_92070_SOLARIS64.zip
rm /oraclesw9i/README.html
```

3.2.6 Downloading the 9.2.0.8 Patch for Oracle9i

CTM R8.0 supports both the 9.2.0.7 and 9.2.0.8 patches for Oracle9i. Complete this section if you want to use the 9.2.0.8 patch for Oracle9i.

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section. To find out which patches have been installed, enter the following commands as the oracle user:

```
cd $ORACLE_HOME/OPatch/
./opatch lsinventory -detail | grep -i "oracle9i patch"
```

The output shows:

```
Oracle9i Patch                               9.2.0.8.0
```

Step 1 Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.

Step 2 Click **Patches**.

Step 3 Click **Simple Search**.

Step 4 In the Search by Patch Number(s) field, enter **4547809**.

Step 5 In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.

Step 6 Click **Go**.

- Step 7** Click **Download**. Download **p4547809_92080_SOLARIS64.zip**.
- Step 8** As the oracle user, save the patch to the /oraclesw9i directory.
- Step 9** As the root user, enter the following commands to prepare the patch set:

```
cd /oraclesw9i
unzip p4547809_92080_SOLARIS64.zip
```

3.2.7 Copying the .rsp Response File Provided by Cisco

If you already have the 9.2.0.8 patch for Oracle9i installed, you can skip this section.

- Step 1** If you are installing 9.2.0.8, you must download the Oracle installation response file from Cisco.com. Go to <http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=278875317> (which requires a registered Cisco.com username and password) and download the patchset_64bit_9208.rsp file.
- Step 2** As oracle user, copy the downloaded patchset_64bit_9208.rsp file to /oraclesw9i.
-

3.2.8 Installing the 9.2.0.8 Patch for Oracle9i

If you already have the 9.2.0.7 or 9.2.0.8 patch for Oracle9i installed, you can skip this section.

- Step 1** Enter the following command to log into the database workstation as the oracle user:
- ```
su - oracle
```
- Step 2** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:
- ```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
- Step 3** Enter the following command to verify that the display is set correctly:
- ```
echo $DISPLAY
```
- In the output, you should see:
- ```
<hostname_or_IP_address>:0.0
```
- Step 4** Enter the following command to stop the Oracle listener:
- ```
lsnrctl stop
```
- Step 5** Enter the following commands to shut down the Oracle database:
- ```
sqlplus /nolog
SQL> connect / as sysdba
SQL> shutdown immediate
SQL> exit
```

Step 6 Enter the following commands to install the 9.2.0.8 patch:

```
cd /oraclesw9i/Disk1
./runInstaller -silent -responseFile /oraclesw9i/patchset_64bit_9208.rsp
```



Note If the Disk Location screen pops up, click **Cancel**.

Step 7 At the prompt to run the root.sh script, log into another terminal window as the root user and enter the following commands:

```
cd /oraclesw9i/product/9.2
./root.sh
```

Step 8 At the prompt for the local bin directory, enter the following path in the root.sh script:

```
/oraclesw9i/product/9.2/local/bin
```

Step 9 The script asks if you would like to overwrite the existing files. Confirm the request.

Step 10 After the script finishes running, return to the prompt popup window and click **OK**.

Step 11 Click **Exit**.

Step 12 Enter the following commands to start the Oracle database:

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> startup
SQL> exit
```

Step 13 Enter the following command to start the Oracle listener:

```
lsnrctl start
```

Step 14 Enter the following commands to remove the 9.2.0.8 patch installation files:

```
rm -rf /oraclesw9i/Disk1
rm /oraclesw9i/p4547809_92080_SOLARIS64.zip
rm /oraclesw9i/README.html
```

3.2.9 Post-Installation Steps for 9.2.0.7 or 9.2.0.8—When Upgrading Your CTM Server Installation

After you install of the Oracle 9.2.0.7 or 9.2.0.8 patches for the Solaris operating system (SPARC 64-bit),

Step 1 Enter the following command to log into the database workstation as the Oracle user:

```
su - oracle
```

Step 2 For single-instance installations, enter the following command to start the listener:

```
lsnrctl start
```

Step 3 For single-instance installations, use SQL*Plus to log into the database as the SYS user with SYSDBA privileges. Enter the following commands:

```
sqlplus /nolog
```

```
SQL> CONNECT SYS/SYS_password AS SYSDBA
SQL> SHUTDOWN
```

Step 4 Enter the following SQL*Plus commands:

```
SQL> STARTUP MIGRATE
SQL> SPOOL patch.log
SQL> @?/rdbms/admin/catpatch.sql
SQL> SPOOL OFF
```



Note The patch.log file is created in the current directory where the SQL commands above were executed.

Step 5 Review the patch.log file for errors and inspect the list of components that are displayed at the end of the catpatch.sql script. This list provides the version and status of each server component in the database.

Step 6 If necessary, rerun the catpatch.sql script after correcting any problems.

Step 7 Enter the following commands to restart the database:

```
SQL> SHUTDOWN
SQL> STARTUP
```

Step 8 Run the utlrp.sql script to recompile all invalid PL/SQL packages now instead of when the packages are accessed for the first time. This step is optional but recommended.

```
SQL> @?/rdbms/admin/utlrp.sql
SQL> exit
```



Note [Step 9](#) should be executed for Oracle patch version 9.2.0.8 only.

Step 9 By default, all new files and directories are created with restricted access during the patch set installation. Users or third party applications with a group identifier that is different from the database will see permission errors when they try to access client utilities or libraries in the database home.

Complete the following substeps to change the user permissions:

- a. Enter the following command to change to the install directory:

```
cd $ORACLE_HOME/install
```

- b. Run changePerm.sh and specify the patched server Oracle home location before accessing the client utilities or libraries.

3.2.10 Downloading the Oracle Patch Installer (Required Only for 9.2.0.7)

The Oracle patch installer is used with 9.2.0.7 to install additional Oracle patches. If you have already installed the Oracle patch installer or if you are using the 9.2.0.8 patch, you can skip this section.

You must log in as an oracle UNIX user to download and unzip files.

Step 1 Go to <http://metalink.oracle.com> and click **Login to MetaLink**. Enter your Oracle MetaLink username and password.

Step 2 Click **Patches**.

- Step 3** Click **Simple Search**.
- Step 4** In the Search by Patch Number(s) field, enter **2617419**.
- Step 5** In the Platform or Language field, choose **Solaris Operating System (SPARC 64-bit)**.
- Step 6** Click **Go**.
- Step 7** Click **Download**.
- Step 8** In the list of patches returned, click the first patch, which has the latest release number.



Note Do not be concerned if the patch refers to a later version of Oracle.

- Step 9** In the Patch 2617419 window, go to the Platform or Language field and choose Generic Platform (the default).
- Step 10** Click **Download**.
- Step 11** Save the patch to the /oraclesw9i/product/9.2 directory.
- Step 12** Enter the following commands to change the patch ownership and unzip the patch:

```
chown oracle:dba /oraclesw9i/product/9.2/p2617419_10102_GENERIC.zip
cd /oraclesw9i/product/9.2
unzip p2617419_10102_GENERIC.zip
```

3.2.11 Installing the CTM R8.0 Server and Upgrading the Database



Note The C shell is assumed for all UNIX commands.

To install the CTM server and upgrade the database, log in as the root user and complete the following steps:

- Step 1** Enter the following command to verify that the CTM R8.0 server is running:
- ```
showctm
```
- Step 2** If the CTM server is running, enter the following command to stop the CTM server before performing the upgrade:
- ```
ctms-abort
```
- Step 3** If you are upgrading from CTM R7.0, install the latest CTM R7.0 service pack. If you are upgrading from CTM R7.2, install the latest CTM R7.2 service pack. See the [Migration Matrix for CTM Service Pack Releases](#) for more information.
- Step 4** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:
- ```
setenv DISPLAY <hostname_or_IP_address>:0.0
```
- Step 5** Enter the following command to verify that the display is set correctly:
- ```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 6 Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0_06 on your workstation.



Note If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.



Note If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

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Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your
system. This may take a moment...
```

Step 7 Click **Next** at the Introduction screen.

Step 8 At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

Step 9 At the Installation Options screen, choose **Upgrade from existing CTM release**; then, click **Next**.



Note If your network size is medium or large, you can also choose **Upgrade CTM network configuration size**. (Small or high-end network sizes cannot be upgraded.) Alternately, you can upgrade the network size as a separate step; see [3.5 Upgrading the CTM Network Configuration Size, page 3-37](#).

Step 10 At the Select Products to Install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.



Note The Web Server check box is selected automatically when you choose Cisco Transport Manager server. The web server allows you to use an HTTP connection to download files from the CTM server to the CTM client. The web server is also used to launch the online help. The web server is required for the CTM server.



Caution Do not check the other check boxes on the Select Products to Install screen.

**Note**

The license for CTM GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install CTM GateWay/CORBA when you install the CTM server; however, this section assumes that you are installing the two products separately. For more information, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#)

**Note**

If the CTM GateWay/CORBA check box is disabled and checked, due to a previous installation, installation is mandatory during the upgrade. If the CTM GateWay/CORBA check box is disabled and unchecked, do not attempt installation during the upgrade.

**Note**

The license for CiscoView (an optional application used by CTM to configure and monitor ONS 155xx NEs) is sold separately if used to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx. If you are using this feature in a production environment to manage the ONS 15530, ONS 15540 ESP, or ONS 15540 ESPx, you must purchase a license for LAN Management Solution (LMS) Release 2.5, which includes CiscoView.

The license for CiscoView is bundled with CTM if used to manage the ONS 15501 DC or AC. You do not need to purchase a separate CiscoView license to manage the ONS 15501 DC or AC.

Step 11 At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.

- Optical Module: ONS 15xxx (inc. shelf controller)
- Cisco MGX Voice Gateway
- IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
- IOS Module: Cisco 7600
- All of the Above Modules

**Note**

- The MDS 9000 module is a common module that will be installed with any selection.
- You cannot install the Cisco 7600 module without /etc/resolv.conf on the workstation.
- Because the Cisco 7600 module is not supported in CTM R7.0 but is supported in CTM R7.2, it will always be disabled if you are upgrading from CTM R7.0. The Cisco 7600 module will be enabled for CTM R7.2 if it was previously installed. To add this module, see [3.6 Adding New Modules, page 3-37](#).

Step 12 At the Main Options screen, complete the following substeps:

- a. Check the **Upgrade CTM database** check box.
- b. Check the **Install CTM server** check box.
- c. Click **Next**.

Step 13 (Optional) If you selected **Upgrade CTM network configuration size** in [Step 10](#), the Select to Upgrade Network Configuration Type screen appears. Select the option to upgrade your current network configuration type.

Step 14 (Optional) At the Select Network Configuration screen, select which of the following available network configuration types you want to upgrade:

- Large
- High end



Note This screen is displayed only if you selected the Upgrade Network Configuration Type option in the previous step.

Step 15 At the CTM Group Information & Sudo Installation screen, complete the following substeps:

- a. Enter the name of the UNIX group to which you want to assign administrator privileges.
- b. To install sudo, check the **Install CTM Sudo** check box. If you do not want to install sudo, uncheck the check box.
- c. Click **Next**.



Note For information about the sudo feature, see [1.4.1 Overview of Sudo Commands, page 1-19](#).

Step 16 (For optical and Cisco 7600 modules only) At the FTP Information screen, complete the following substeps to configure an FTP account for software download operations:

- a. Enter the following information:
 - FTP username
 - FTP user password
 - Confirm FTP user password
 - FTP directory
- b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the CTM server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the CTM server workstation.
- c. Click **Next**.



Note The FTP information that you enter during the CTM server installation can be modified later from the CTM client Control Panel window. See the [Cisco Transport Manager Release 8.0 User Guide](#) for more information.

Step 17 At the Server IP Address screen, specify an IP address for the CTM server. The Hostname field is automatically populated with the hostname of the selected IP address. After confirming the IP address and hostname details, click **Next**.



Note The hostname is available only if you select Cisco MGX Voice Gateway.

Step 18 (For optical, IOS XR, and Cisco 7600 modules only) At the Configure TFTP Server screen, complete the following substeps if you want to enable TFTP:

- a. Check the **Enable TFTP Server** check box.
- b. Enter the TFTP directory name. The default is /tftpboot.

c. Click **Next**.

Step 19 At the Destination Folder screen, specify where you want to install the CTM server. The default directory is `/opt/CiscoTransportManagerServer`. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.



Note If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.



Caution CTM checks for the `/opt/CiscoTransportManagerServer` directory or a symbolic link to it. If CTM cannot find the `/opt/CiscoTransportManagerServer` directory or a symbolic link, CTM creates a symbolic link automatically. Therefore, do not delete any instances of `/opt/CiscoTransportManagerServer` from your CTM file structure.

Step 20 The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.



Note It might take 30 to 60 minutes or longer to install the CTM server and upgrade the database, depending on your system performance.

Step 21 At the Insert New Media screen, complete the following substeps:

- a. Eject the CTM Server Disk 1 installation CD, insert the CTM Server Disk 2 installation CD, and click **Browse**.
- b. The Select a Folder dialog box opens. Double-click **cdrom**; then, single-click **cdrom0**. The filename text box now reads `/cdrom/cdrom0`.
- c. In the Select a Folder dialog box, click **Select**.
- d. In the Insert New Media screen, click **OK**.
- e. Eject the CTM Server Disk 2 installation CD, insert the CTM Server Disk 3 installation CD, and click **Browse**.
- f. The Select a Folder dialog box opens. Double-click **cdrom**; then, single-click **cdrom0**. The filename text box now reads `/cdrom/cdrom0`.
- g. In the Select a Folder dialog box, click **Select**.
- h. In the Insert New Media screen, click **OK**.

Step 22 The Web Server Installation Summary screen summarizes the results of the web server installation. Click **Next**.

Step 23 The Install Complete screen summarizes the results of the installation. Click **Next**.

Step 24 The Upgrade Server and Database Complete screen displays the log location. Click **Done**.

Step 25 Enter the following command to reboot the system. The CTM server starts automatically after rebooting:



Caution After you click the Done button in the installation GUI, the background processes continue to run for several minutes. Before rebooting, you must wait for the reboot message on the terminal where you started the installation. Depending on the server performance, the background processes can take up to 15 minutes before the reboot message appears. Rebooting the server before this message appears will break CTM functionalities.

```
init 6
```

- Step 26** To verify that the CTM R8.0 server is running, enter the **showctm** command after the server reboots. The **showctm** command displays the CTM server version running as 8.0, followed by the build number. In the output, you will see two instances of “CTM Server,” “SnmpTrapService,” “SMService,” and “Apache Web Server.” This indicates that the CTM server is running. You should also see NE-specific processes, depending on your network. You might also see CTM GateWay/CORBA and CTM GateWay/TL1 instances.

3.2.12 Upgrading the Database on the CTM Database Workstation



Note The C shell is assumed for all UNIX commands.

To upgrade the database, log in as the root user on the CTM database workstation and complete the following steps:

- Step 1** If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

- Step 2** Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

- Step 3** Enter the following commands:

```
cd /opt/CiscoTransportManagerServer/patch/migration/8.0.0
./pre_migration.sh
cd /
```

- Step 4** Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0_06 on your workstation.



Note If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.

**Note**

If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

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Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your system. This may take a moment...
```

- Step 5** Click **Next** at the Introduction screen.
- Step 6** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 7** At the Installation Options screen, choose **Upgrade from existing CTM release**; then, click **Next**.

**Note**

If your network size is medium or large, you can also choose **Upgrade CTM network configuration size**. (Small or high-end network sizes cannot be upgraded.) Alternately, you can upgrade the network size as a separate step; see [3.5 Upgrading the CTM Network Configuration Size, page 3-37](#).

- Step 8** At the Select Products to Install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.

**Note**

The Web Server check box is selected automatically when you choose Cisco Transport Manager server. The web server allows you to use an HTTP connection to download files from the CTM server to the CTM client. The web server is also used to launch the online help. The web server is required for the CTM server.

**Caution**

Do not check the other check boxes on the Select Products to Install screen.

**Note**

The license for CTM GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install CTM GateWay/CORBA when you install the CTM server; however, this section assumes that you are installing the two products separately. For more information, see [Chapter 4, “Installing CTM GateWay/CORBA R8.0.”](#)

- Step 9** At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.
- Optical Module: ONS 15xxx (inc. shelf controller)
 - Cisco MGX Voice Gateway
 - IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
 - IOS Module: Cisco 7600
 - All of the Above Modules

**Note**

- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.
- Because the Cisco 7600 module is not supported in CTM R7.0 but is supported in CTM R7.2, it will always be disabled if you are upgrading from CTM R7.0. The Cisco 7600 module will be enabled for CTM R7.2 if it was previously installed. To add this module, see [3.6 Adding New Modules, page 3-37](#).

Step 10 At the Main Options screen, check only the **Upgrade CTM database** check box; then, click **Next**.

**Note**

Be sure to uncheck the **Install CTM server** check box.

Step 11 (Optional) If you selected **Upgrade CTM network configuration size** in [Step 7](#), the Select to Upgrade Network Configuration Type screen appears. Select the option to upgrade your current network configuration type.

Step 12 (Optional) At the Select Network Configuration screen, select which of the following available network configuration types you want to upgrade:

- Large
- High end

**Note**

This screen is displayed only if you selected the Upgrade Network Configuration Type option in the previous step.

Step 13 At the CTM Group Information & Sudo Installation screen, complete the following substeps:

- Enter the name of the UNIX group to which you want to assign administrator privileges.
- To install sudo, check the **Install CTM Sudo** check box. If you do not want to install sudo, uncheck the check box.
- Click **Next**.

**Note**

For information about the sudo feature, see [1.1 CTM Server Requirements, page 1-1](#).

Step 14 (For optical and Cisco 7600 modules only) At the FTP Information screen, accept the default values; then, click **Next**.

Step 15 The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.

**Note**

It might take 20 minutes or longer to upgrade the database, depending on your system performance.

Step 16 The Upgrade Database Complete screen summarizes the results of the upgrade. Click **Done**.

Step 17 Enter the following commands:

```
cd /opt/CiscoTransportManagerServer.oldCTM/patch/migration/8.0.0
```

```
./post_migration.sh  
cd /
```

3.2.13 Installing the CTM R8.0 Server on the CTM Server Workstation



Note The C shell is assumed for all UNIX commands.

To install the CTM server, log in as the root user on the workstation where the CTM server will run and complete the following steps:

Step 1 If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 2 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 3 Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /  
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0_06 on your workstation.



Note If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.



Note If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

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Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your  
system. This may take a moment...
```

Step 4 Click **Next** at the Introduction screen.

Step 5 At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

Step 6 At the Installation Options screen, choose **Upgrade from existing CTM release**; then, click **Next**.

Step 7 At the Select Products to Install screen, check the **Cisco Transport Manager server** check box; then, click **Next**.



Caution Do not check the other check boxes on the Select Products to Install screen.

Step 8 At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.

- Optical Module: ONS 15xxx (inc. shelf controller)
- Cisco MGX Voice Gateway
- IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
- IOS Module: Cisco 7600
- All of the Above Modules



Note

- The MDS 9000 module is a common module that will be installed with any selection.
 - You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.
 - Because the Cisco 7600 module is not supported in CTM R7.0 but is supported in CTM R7.2, it will always be disabled if you are upgrading from CTM R7.0. The Cisco 7600 module will be enabled for CTM R7.2 if it was previously installed. To add this module, see [3.6 Adding New Modules, page 3-37](#).
-

Step 9 At the Main Options screen, check only the **Install CTM server** check box; then, click **Next**.



Note Be sure to uncheck the **Upgrade CTM database** check box.

Step 10 At the CTM Group Information & Sudo Installation screen, complete the following substeps:

- a. Enter the name of the UNIX group to which you want to assign administrator privileges.
- b. To install sudo, check the **Install CTM Sudo** check box. If you do not want to install sudo, uncheck the check box.
- c. Click **Next**.

Step 11 (For optical and Cisco 7600 modules only) At the FTP Information screen, complete the following substeps to configure an FTP account for software download operations:

- a. Enter the following information:
 - FTP username
 - FTP user password
 - Confirm FTP user password
 - FTP directory
- b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the CTM server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the CTM server workstation.
- c. Click **Next**.



Note The FTP information that you enter during the CTM server installation can be modified later from the CTM client Control Panel window. See the *Cisco Transport Manager Release 8.0 User Guide* for more information.

- Step 12** At the Server IP Address screen, specify an IP address for the CTM server. The Hostname field is automatically populated with the hostname of the selected IP address. After confirming the IP address and hostname details, click **Next**.



Note The hostname is available only if you select Cisco MGX Voice Gateway.

- Step 13** (For optical, IOS XR, and Cisco 7600 modules only) At the Configure TFTP Server screen, complete the following substeps if you want to enable TFTP:
- Check the **Enable TFTP Server** check box.
 - Enter the TFTP directory name. The default is /tftpboot.
 - Click **Next**.

- Step 14** At the Specify CTM Database to Connect to screen, enter the IP address or hostname of the database workstation; then, click **Next**.



Caution Be sure to enter the correct IP address or hostname. Do not simply accept the default.



Note If you entered a hostname, the setup program automatically translates the hostname to a physical IP address and prompts you to confirm the address. Click **Yes**.

- Step 15** At the Destination Folder screen, specify where you want to install the CTM server. The default directory is /opt/CiscoTransportManagerServer. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.



Note If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.



Note Do not specify any mount point as the target installation directory for the server installation, or the installation data might be lost when the workstation restarts.



Caution CTM checks for the /opt/CiscoTransportManagerServer directory or a symbolic link to it. If CTM cannot find the /opt/CiscoTransportManagerServer directory or a symbolic link, CTM creates a symbolic link automatically. Therefore, do not delete any instances of /opt/CiscoTransportManagerServer from your CTM file structure.

- Step 16** The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.



Note It might take 20 minutes or longer to install the server, depending on your system performance.

- Step 17** At the Insert New Media screen, complete the following substeps:
- a. Eject the CTM Server Disk 1 installation CD, insert the CTM Server Disk 2 installation CD, and click **Browse**.
 - b. The Select a Folder dialog box opens. Double-click **cdrom**; then, single-click **cdrom0**. The filename text box now reads `/cdrom/cdrom0`.
 - c. In the Select a Folder dialog box, click **Select**.
 - d. In the Insert New Media screen, click **OK**.
- Step 18** The Web Server Installation Summary screen summarizes the results of the web server installation. Click **Next**.
- Step 19** The Install Complete screen summarizes the results of the installation. Click **Next**.
- Step 20** The Upgrade Server Complete screen displays the log location. Click **Done**.
- Step 21** Enter the following command to reboot the system. The CTM server starts automatically after rebooting:



Caution After you click the Done button in the installation GUI, the background processes continue to run for several minutes. Before rebooting, you must wait for the reboot message on the terminal where you started the installation. Depending on the server performance, the background processes can take up to 15 minutes before the reboot message appears. Rebooting the server before this message appears will break CTM functionalities.

```
init 6
```

- Step 22** To verify that the CTM R8.0 server is running, enter the **showctm** command after the server reboots. The **showctm** command displays the CTM server version running as 8.0, followed by the build number. In the output, you will see two instances of “CTM Server,” “SnmpTrapService,” “SMService,” and “Apache Web Server.” This indicates that the CTM server is running. You should also see NE-specific processes, depending on your network. You might also see CTM GateWay/CORBA and CTM GateWay/TL1 instances.
-

3.2.14 Copying the Client Upgrade Files After the CTM Server Installation

You have two options for upgrading each client installation to the latest version of CTM that is on the server. You can choose to:

- Manually upgrade each client installation. If you have a previously installed version of the CTM client, you must delete the directory where the previous client is installed before installing the CTM R8.0 client. See [5.1 Installing the CTM Client and Cisco Edge Craft on Microsoft Windows, page 5-2](#) or [5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris, page 5-7](#) for more information.
- Automatically upgrade each client when it connects to a server. During login, if the CTM client software version is older than the CTM server software version, the client will be prompted for upgrade. See [5.2 Starting the CTM Client in Microsoft Windows, page 5-5](#) or [5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris, page 5-7](#) for more information.

For this option you must copy the client installation files to the server. The CTM client and server installation files reside on separate installation CDs. To copy the client installation files to the server, you must eject the CTM server CD, insert the CTM client CD, and run an automated script, `CopyUpgradeFiles.sh`, to copy the client installation files to a specific folder under the CTM server installation directory. To do this, log in as the root user and complete the following steps.



Note The CTM server must be installed before completing the following steps.

Step 1 Enter the following commands to eject the CTM server installation CD:

```
cd /
eject cdrom
```

Step 2 Insert the CTM client Solaris installation CD and enter the following command:

```
/cdrom/cdrom0/ctmc/CopyUpgradeFiles.sh
```

You should see the following output:

```
Copying the client upgrade files can take several minutes.
Copying CTM Client upgrade files...
Copying Solaris client upgrade files
Solaris client upgrade files copied
Please insert CTM client Windows CD to CD ROM, Copy will continue in 60 seconds...
Could not find Window Client CD, Please insert CTM client Windows CD to continue
Copy will continue in 300 seconds...
Copying Windows client upgrade files
Done...All upgrade files have been copied to server successfully!
Please hit Enter key to return to the prompt mode
```



Note This operation will occupy 800 MB of disk space.

3.3 Verifying that the Oracle9i and CTM Server Processes Are Running

After installation, complete the following steps to verify that the Oracle9i and CTM server processes are running:

Step 1 Enter the following commands on the CTM database workstation to verify that CTM database is running:

```
su - oracle
sqlplus ctmanager/<password_for_ctmanager_Oracle_user>
```



Note The default password for the ctmanager oracle user is `ctm123!`.

You should see the following output:

```
Connected to:
Oracle9i...
```

Step 2 Enter the following command to exit SQL*Plus:

```
exit
```

Step 3 Enter the following command to verify that the CTM R8.0 server is running:

```
showctm
```

In the output, you should see the text “CTM Server,” “SnmpTrapService,” “SMService,” and “Apache Web Server.” This indicates that the CTM server is running. You should also see some NE-specific processes, depending on your network. You might also see CTM GateWay/CORBA and CTM GateWay/TL1 instances.

Step 4 If the CTM server is not running, log into the UNIX workstation as the root user and enter the following command:

```
ctms-start
```

Step 5 If the following error is returned on the command prompt for the web server:

```
(125)Address already in use: make_sock: could not bind to address <IP_address>
no listening sockets available, shutting down
```

Complete the following substeps:

a. Enter the following command on the server workstation; then, kill the processes listed:

```
ps -ef | grep httpd | grep CiscoTransportManagerServer | grep -v grep
```

b. Enter the following command to shut down the CTM server:

```
ctms-stop
```

c. Enter the following command to restart the CTM server (this restarts the latest installed web server):

```
ctms-start
```

Step 6 If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```
sudo ctms-start
```

3.4 Setting Up Sudo

As described in [1.4.1 Overview of Sudo Commands, page 1-19](#), the CTM server installation includes installation of the UNIX sudo command. This command allows nonroot users who belong to the UNIX group specified during installation to run certain CTM administrative commands. For security reasons, the installed sudo command **setuid** is disabled by default. You must enable setuid on the sudo command in order for it to work.



Note

Sudo is often available in the standard UNIX environment established by the CTM server system administrator. If so, it is not necessary to use the sudo bundled with CTM or follow this procedure to enable it. Instead, you can use the sudo established by the system administrator.

To enable setuid:

-
- Step 1** Log into the CTM server as the root user and enter the following command:
- ```
chmod 4111 /opt/CiscoTransportManagerServer/admin/sudo/sudo
```
- Step 2** Verify that users have /opt/CiscoTransportManagerServer/admin/sudo in their path environment, so that they can execute sudo without having to specify the full path.
- 

## 3.5 Upgrading the CTM Network Configuration Size



---

**Note** You can complete the following procedure whether you are installing CTM R8.0 as a new installation or upgrading to CTM R8.0 from an earlier release.

---

- Step 1** At the Introduction screen, click **Next**.
- Step 2** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 3** At the Installation Options screen, choose **Upgrade CTM network configuration size**; then, click **Next**.
- Step 4** At the Select Network Configuration screen, specify the size of your network; then, click **Next**.



---

**Note** You can upgrade the network configuration only if your network size is medium or large. Small and high-end configurations cannot be upgraded.

---

- Step 5** At the Pre-Installation Summary screen, click **Install**.
- 

## 3.6 Adding New Modules



---

**Note** You can complete the following procedure whether you are installing CTM R8.0 as a new installation or upgrading to CTM R8.0 from an earlier release.

---

- Step 1** If the GUI is running, exit.
- Step 2** Enter the following command to stop the CTM server:
- ```
ctms-stop
```
- Step 3** Insert the CTM Server Disk 1 installation CD and enter the following commands:
- ```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

Wait for up to 60 seconds while the following message appears:

Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your system. This may take a moment...

- Step 4** Click **Next** at the Introduction screen.
- Step 5** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.
- Step 6** At the Installation Options screen, choose **Add new modules**; then, click **Next**.
- Step 7** At the Select Modules to Install screen, select individual modules or select all; then, click **Next**.
- Optical Module: ONS 15xxx (inc. shelf controller)
  - Cisco MGX Voice Gateway
  - IOS XR Module: XR 12000, CRS-1 (inc. shelf controller)
  - IOS Module: Cisco 7600
  - All of the Above Modules




---

**Note**

- You cannot install the Cisco 7600 module without `/etc/resolv.conf` on the workstation.
  - All service modules of the MGX NE, including the RPM module, should be upgraded to R5.4 before adding the NE to CTM in SNMPv3 mode. Otherwise, CTM will not be able to synchronize with the NE.
  - For any modules that are already installed, the option to install them is dimmed. You cannot install modules that are already installed. Only modules that are not yet installed are selectable.
- 

- Step 8** (For optical and Cisco 7600 modules only) At the FTP Information screen, enter the following information to configure an FTP account for software download operations:
- FTP username
  - FTP user password
  - Confirm FTP user password
  - FTP directory
- Step 9** (For optical, IOS XR, and Cisco 7600 modules only) At the Configure TFTP Server screen, complete the following substeps if you want to enable TFTP:
- a. Check the **Enable TFTP Server** check box.
  - b. Enter the TFTP directory name. The default is `/tftpboot`.
  - c. Click **Next**.
- Step 10** At the Pre-Installation Summary screen, click **Install**.
- Step 11** At the Add New Module Complete screen, click **Done**.
- Step 12** After the install is complete, enter the following command to start the CTM server:
- ```
ctms-start
```
- Step 13** Start the client GUI after all of the CTM server services are launched.
-



CHAPTER 4

Installing CTM GateWay/CORBA R8.0

The CTM GateWay/CORBA R8.0 option is a CORBA-based interface that provides higher-layer management systems with information for all CTM-supported NEs.



Note

The license for CTM GateWay/CORBA R8.0 is sold separately. If you are using this feature in a production environment, you must purchase a license.

You can install CTM GateWay/CORBA when you install the CTM server, or you can install CTM GateWay/CORBA separately. This chapter describes how to install CTM GateWay/CORBA as a separate option after installing the CTM R8.0 server.



Tip

For more information about CORBA support, including how to configure CTM GateWay/CORBA, see the [Cisco Transport Manager Release 8.0 GateWay/CORBA User Guide and Programmer Manual](#).

This chapter contains the following sections:

- [4.1 Installing CTM GateWay/CORBA R8.0, page 4-1](#)
- [4.2 Re-enabling CTM GateWay/CORBA After Reinstalling the CTM Database, page 4-3](#)

4.1 Installing CTM GateWay/CORBA R8.0



Note

- You must install CTM GateWay/CORBA on the same workstation as the CTM server. During the CTM GateWay/CORBA installation, you do not need to shut down the CTM server.
 - The CTM database must be up and running before installing CTM GateWay/CORBA.
-

Log into the CTM server workstation as the root user and complete the following steps in C shell:

Step 1 If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

```
/usr/openwin/bin/xhost +
```

Step 2 After the xterm connection is established, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 3 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 4 Insert the CTM Server Disk 1 installation CD and enter the following commands:

```
cd /
cdrom/cdrom0/Disk1/ctmsetup.sh
```

The setup program searches for Sun Microsystems JRE version 1.5.0_06 on your workstation.



Note If JRE is not installed, the setup program starts the Java installation program. Follow the prompts to install JRE. Enter **yes** at the following binary license code agreement prompt:

```
Do you agree to the above license terms? [yes or no]
```

Then, continue this procedure.



Note If the required Solaris patches are missing, you must install them manually. Click **Cancel**; then, click **Quit**. Download the patches from SunSolve Online at <http://sunsolve.sun.com>. After you install the patches, continue this procedure.

The installation begins. Wait for up to 60 seconds while the following message appears:

```
Please wait, Cisco Transport Manager Server Release 8.0 is being configured for your
system. This may take a moment...
```

Step 5 Click **Next** at the Introduction screen.

Step 6 At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

Step 7 At the Installation Options screen, check **New Installation**; then, click **Next**.

Step 8 At the Select Products to Install screen, check the **Cisco Transport Manager CORBA GateWay** check box; then, click **Next**.

Step 9 At the Server IP Address screen, specify an IP address for the server setup; then, click **Next**.

Step 10 The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.

Step 11 The Install Complete screen summarizes the results of the installation. Click **Done**.

Step 12 Enter the following commands to eject the CTM Server Disk 1 installation CD:

```
cd /
eject cdrom
```

4.2 Re-enabling CTM GateWay/CORBA After Reinstalling the CTM Database

If you reinstall the CTM database on the workstation where CTM GateWay/CORBA is installed, the CTM GateWay/CORBA node will be disabled in the Control Panel window.

To re-enable the CTM GateWay/CORBA node in the Control Panel, run the `update_config_for_gwcorba.sh` script located in the `/opt/CiscoTransportManagerServer/bin` directory.

■ 4.2 Re-enabling CTM GateWay/CORBA After Reinstalling the CTM Database



CHAPTER 5

Installing the CTM R8.0 Client and Cisco Edge Craft

This chapter describes how to install and start the CTM client and Cisco Edge Craft on Microsoft Windows or Sun Solaris. Cisco Edge Craft is the local craft application used to manage ONS 15302 and ONS 15305 NEs.



Note

- You can have multiple versions of the Windows CTM client installed simultaneously (in different folders). When installing the CTM R8.0 client you can remove earlier versions, or leave them installed.
 - You cannot have multiple versions of the Solaris CTM client installed on a Solaris workstation.
-

This chapter contains the following sections:

- [5.1 Installing the CTM Client and Cisco Edge Craft on Microsoft Windows, page 5-2](#)
- [5.2 Starting the CTM Client in Microsoft Windows, page 5-5](#)
- [5.3 Starting Cisco Edge Craft in Microsoft Windows, page 5-6](#)
- [5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris, page 5-7](#)
- [5.5 Starting the CTM Client in Sun Solaris, page 5-9](#)
- [5.6 Starting Cisco Edge Craft in Sun Solaris, page 5-10](#)



Note

For an explanation of error messages that you might encounter during the CTM client installation, see [Appendix A, “Understanding Installation Error Messages.”](#)

5.1 Installing the CTM Client and Cisco Edge Craft on Microsoft Windows

This section describes how to install the CTM client and Cisco Edge Craft on your Microsoft Windows workstation.


Note

You must have administrator privileges on the local workstation and the client software must be shut down before installing the CTM client.

5.1.1 Uninstalling the Previous Version of the CTM Client or Cisco Edge Craft

If you installed a previous version of the CTM client and you want to install another version of the CTM client in the same location on your system, it is recommended that you uninstall the previous version before installing the CTM R8.0 client or Cisco Edge Craft. If you want to have another version of the CTM client in your system (without uninstalling the previous version), choose a different folder to install the CTM client.

To uninstall a CTM client, see [B.3 Uninstalling the CTM Client and Cisco Edge Craft on Microsoft Windows, page B-2](#).

5.1.2 Installing the CTM Client and Cisco Edge Craft

-
- Step 1** Insert the CTM client installation CD and navigate to `ctmc\win32\setup.exe`. Double-click **setup.exe**.
- Step 2** Click **Next** at the Introduction screen.
- Step 3** At the Destination Folder screen, complete the following substeps:
- Specify where you want to install the CTM client. The default destination folder is `C:\Cisco\TransportManagerClient8_0`. The text box is disabled. Click **Change** to choose a different destination.
 - Specify whether you want to create a CTM desktop icon, a CTM shortcut in the Start menu, or both. If you choose the Start menu shortcut option, specify the destination folder for the shortcut. The default shortcut folder is `Programs\Cisco Transport Manager`.
 - Click **Next**.


Note

If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.

- Step 4** At the Select Default Memory Configuration screen, specify the size of your server installation (small, medium, large, or high end). Click **Next**.
- Step 5** At the Launch Cisco Edge Craft screen, specify whether you want to install Cisco Edge Craft at the same time as the CTM client. If you choose to install Cisco Edge Craft, it will be installed in the `<CTM_home_directory>/CiscoEdgeCraft/` folder. Click **Next**.

**Note**

The MGX Voice Gateway applications cannot be launched from the Domain Explorer if the CTM client is installed in a location that has spaces in the directory path.

**Note**

If you do not choose to install Cisco Edge Craft in [Step 5](#), you cannot install it manually during a second installation. Instead, if you decide to install Cisco Edge Craft later, you will need to uninstall the CTM client and then repeat the CTM client installation, this time checking the check box to install Cisco Edge Craft.

**Note**

If your Cisco Edge Craft is bundled and installed with a CTM client, you cannot upgrade it with a standalone Cisco Edge Craft package.

**Note**

Cisco Edge Craft is an SNMP-based application. Verify that the workstation performing the installation can reach the ONS 1530x devices through UDP port 161 before launching Cisco Edge Craft.

- Step 6** The Pre-Installation Summary screen shows the items that will be installed and the space that is required. Click **Install**.
- Step 7** The Install Complete screen summarizes the results of the installation. Click **Done**.
- Step 8** Eject the CTM client installation CD.

5.1.3 Specifying the Default Browser to Display the Online Help

In Microsoft Windows, CTM uses the default browser to display the online help. If you want to use a specific browser to launch the CTM online help, make that the default browser for your workstation.

**Note**

During testing, Cisco uses Internet Explorer, Netscape, and Mozilla to display the online help; other browsers have not been tested.

The online help for Cisco Edge Craft requires Adobe Acrobat Reader. Acrobat Reader is not required in your path environment variable, but the PDF file type must be associated with Acrobat Reader.

5.1.3.1 Special Considerations when Proxy Server Is Enabled

If you are using a proxy-server enabled web browser, complete one of the following options, depending on your browser type.

For Internet Explorer, complete the following steps:

- Step 1** Choose **Tools > Internet Options**.
- Step 2** Click the **Connections** tab.

- Step 3** Click the **LAN Settings** button.
- Step 4** Complete one of the following options:
- Uncheck the **Use a proxy server for your LAN** check box.
 - If the *Use a proxy server for your LAN* check box must remain checked, click **Advanced**. Enter your server IP address in the *Do not use proxy server addresses beginning with* field. Separate each address with a semicolon.
- Step 5** Click **OK**.
-

For Netscape and Mozilla, complete the following steps:

- Step 1** Choose **Edit > Preferences**.
- Step 2** Expand **Advanced** and choose **Proxies**.
- Step 3** Complete one of the following options:
- If you do not want to use a proxy, click **Direct connection to the Internet**.
 - If you do not have a proxy location (URL), click **Manual proxy configuration**. In the *No Proxy for* field, enter the domains that you do not want to use a proxy for. Use a comma to separate domains.
- Step 4** Click **OK**.
-

5.1.4 Enabling the SSH Remote Access CLI for MGX

This procedure explains how to use the SSH client from SSH Communications Security or Tectia. Other SSH clients from other vendors are not supported. PuTTY is supported. This procedure applies only to MGX devices.

- Step 1** Obtain SSH Tectia from www.ssh.com.
- Step 2** Install SSH Tectia.
- Step 3** Open the local PC folder where Tectia is installed.
- Step 4** Change the name of the ssh-client-g3.exe executable to **sshclient.exe**.



Note The ssh-client-g3.exe filename is valid in Tectia release 5.1.3.8; the filename might be different for other release numbers.

- Step 5** Verify that the executable file exists in the current path. To do this, open a DOS shell and launch the sshclient.exe executable manually.
- Step 6** If the executable file does not exist in the current path, set the path environment to the directory path of putty.exe. To do this, complete the following substeps:
- a. Right-click **My Computer** and choose **Properties**.
 - b. Click the **Advanced** tab; then, click **Environment Variables**.
 - c. Select the **PATH** variable and add an entry for the PuTTY directory path.

- d. Click **OK**; then, click **OK** to close the System Properties dialog box.
-

5.2 Starting the CTM Client in Microsoft Windows

- Step 1** Depending on the option you chose during installation, double-click the CTM desktop icon or choose the CTM Start menu shortcut to start the client.



Note It is not necessary to restart the workstation.

- Step 2** The first time you log in, use the default username and password:

- Username: **SysAdmin**
- Password: **Ctm123!**



Note The username and password are case sensitive. After you enter the password, the Password field displays a fixed-length string of 12 asterisks (*), regardless of the actual length of the password.

- Step 3** Enter the CTM server hostname or IP address and click **OK**.



Note Do not enter a hostname unless Domain Name System (DNS) is enabled in your network.

- Step 4** By default, for security reasons you are prompted to change the password after you log in for the first time. Click **Yes**. The password complexity is configurable in the Control Panel > Security Properties pane. By default, the password must:

- Contain at least six characters, but not more than 12 characters.
- Contain at least two alphabetic characters (A–Z, a–z). Of the alphabetic characters, at least one must be uppercase and one must be lowercase.
- Contain at least one numeric character (0–9).
- Contain at least one special character (+ # % , . ; & !). The default special character set is TL1+UNIX.
- Allow a special character as the first or last character.
- Allow a numeric character as the first or last character.
- Not contain the username or any circular shift of the username. An uppercase letter and its corresponding lowercase letter are considered equivalent. For example, if the username is Arthur, the password cannot contain the string arthur, rthura, thurar, hurart, urarth, or rarthu.
- Differ from the old password by at least three characters. For example, if the old password is MikeBrady5!, the new password cannot be mikebrady5% because only the last character is different. However, the new password MikeBrady2!99 is acceptable because it differs from MikeBrady5! by three characters.

- Step 5** Change the password; then, click **OK**.

- Step 6** Click **OK** in the login advisory dialog box.

- Step 7** If your CTM client software version is older than the CTM server software version, you are prompted with the following dialog box:

CTM client needs to be upgraded for proper operation. Do you want to start the upgrade now? Selecting "No" will exit the application.

Click **Yes**. The CTM server automatically upgrades your CTM client to the newer version. Click **OK** at the "Proceeding with upgrade" prompt and follow the prompts to install the newer client version.



Note The default SysAdmin user has limited privileges. Create new CTM users with SuperUser privileges to have access to all CTM operations. See the [Cisco Transport Manager Release 8.0 User Guide](#) for information about user profiles and creating CTM users.

5.3 Starting Cisco Edge Craft in Microsoft Windows

- Step 1** Open a Windows DOS Command Prompt window by choosing **Start > Programs > Accessories > Command Prompt**.

- Step 2** Change directories to the `<CTM_home_directory>/CiscoEdgeCraft/ bin` directory.



Note You can click **Change** to choose a different destination directory.

- Step 3** Run the **CiscoEdgeCraft.exe** file. The Cisco Edge Craft login screen appears.



Note It is not necessary to restart the workstation.

- Step 4** At the Cisco Edge Craft login screen, complete the following substeps:
- a. Enter the community string. The community string represents the NE password, which is set in the NE flash memory by using the command-line interface (CLI).
 - b. Enter the IP address of the NE that you want to connect to.
 - c. Click **Logon**.

5.4 Installing the CTM Client and Cisco Edge Craft on Sun Solaris

This section describes how to install the CTM client and Cisco Edge Craft on your Sun Solaris 10 workstation.

5.4.1 Uninstalling the Previous Version of the CTM Client or Cisco Edge Craft

If you installed a previous version of the CTM client or Cisco Edge Craft, you must delete the directory where the previous client is installed before installing the CTM R8.0 client or Cisco Edge Craft. See [B.4 Uninstalling the CTM Client and Cisco Edge Craft on Sun Solaris, page B-3](#).

5.4.2 Installing the CTM Client and Cisco Edge Craft

Step 1 Log in as the root user and insert the CTM client installation CD.

Step 2 From a terminal window, enter the following commands:

```
cd /cdrom/cdrom0/ctmc/solaris/Disk1
./ctmcsetup.sh
```

The CTM client installation begins. Wait for up to 60 seconds while the following message appears:

```
Installing Cisco Transport Manager client...
```

Step 3 Click **Next** at the Introduction screen.

Step 4 At the Destination Folder screen, complete the following substeps:

- a. Specify where you want to install the CTM client. The default destination folder is `/opt/CiscoTransportManagerClient`. You can click **Change** to choose a different destination.
- b. If you want to add a CTM icon to the Common Desktop Environment (CDE) front panel or add a CTM entry to the CDE Workspace menu, check the appropriate check box(es):

- **Add Icon to CDE Front Panel**
- **Add Entry to CDE Workspace Menu**

These options allow you to launch the CTM client without having to open a terminal or console window and invoke the `ctmc-start` command. If you choose either option, you might have to perform one of the following actions to see the changes:

- Restart your CDE Window Manager
- Log out of CDE; then, log back in
- Reboot the system

- c. Click **Next**.



Note

If the destination directory that you specified is a new directory, you will receive the message “Specified directory does not exist, create it?” Click **Yes**.



Note Do not specify any mount point as the target installation directory for the client installation, or the installation data might be lost when the workstation restarts.

- Step 5** At the Select Default Memory Configuration screen, specify the size of your network (small, medium, large, or high end). Click **Next**.
- Step 6** At the Launch Cisco Edge Craft screen, specify whether you want to install Cisco Edge Craft at the same time as the CTM client. If you choose to install Cisco Edge Craft, it will be installed in the `/opt/CiscoTransportManagerClient/CiscoEdgeCraft` folder. Click **Next**.



Note If you do not choose to install Cisco Edge Craft in [Step 6](#), you cannot install it manually during a second installation. Instead, if you decide to install Cisco Edge Craft later, you will need to uninstall the CTM client and then repeat the CTM client installation, this time checking the check box to install Cisco Edge Craft.



Note If your Cisco Edge Craft is bundled and installed with a CTM client, you cannot upgrade it with a standalone Cisco Edge Craft package.



Note Cisco Edge Craft is an SNMP-based application. Verify that the workstation performing the installation can reach the ONS 1530x devices through UDP port 161 before launching Cisco Edge Craft.

- Step 7** At the CTM Group Information screen, enter the name of the UNIX group to which you want to assign administrator privileges. The default is the group name of the root user. You can uncheck the *Ignore user-entered group name* check box and enter the group name of your choice. After you specify the CTM group name, click **Next**.



Note The group name must exist on the UNIX workstation in order for the CTM installation to proceed. The users that belong to the group must have the **umask 002** command configured.

- Step 8** The Pre-Installation Summary screen shows the items that will be installed and the space that is required. Click **Install**.
- Step 9** The Install Complete screen summarizes the results of the installation. Click **Done**.
- Step 10** Enter the following commands to eject the CTM client installation CD:

```
cd /
eject cdrom
```

5.4.3 Requirements to Display the Online Help

The online help for Cisco Edge Craft requires Adobe Acrobat Reader in your path environment variable.



Tip

If you cannot launch the online help, open a command prompt from another window and enter the **xhost +** command, providing the full path name. Also, verify that the DISPLAY variable is set correctly.

5.5 Starting the CTM Client in Sun Solaris

Step 1 At the console, enter one of the following commands, depending on the size of your network configuration:

- If you are connecting to a small server, enter:
`./ctmc-start -small`
- If you are connecting to a medium server, enter:
`./ctmc-start -medium`
- If you are connecting to a large server, enter:
`./ctmc-start -large`
- If you are connecting to a high-end server, enter:
`./ctmc-start -highend`



Caution

In the Bourne shell, if you enter **ctmc-start** to start the client and then execute **Ctrl+C** in the xterm window where the client was launched, the CTM client will terminate.



Note

The installation program creates a soft link on /usr/bin for ctmc-start. If the soft link is missing, enter `<install_directory>/ctmc-start` at the console.

The following message appears:

```
Starting Cisco Transport Manager client. Please wait.
```

Wait 10 to 20 seconds for the CTM client application to start.

Step 2 The first time you log in, enter the default username and password:

Username: **SysAdmin**

Password: **Ctm123!**



Note

The username and password are case sensitive. After you enter the password, the Password field displays a fixed-length string of 12 asterisks (*), regardless of the actual length of the password.

Step 3 Enter the CTM server hostname or IP address and click **OK**.



Note Do not enter a hostname unless DNS is enabled in your network.

- Step 4** By default, for security reasons you are prompted to change the password after you log in for the first time. Click **Yes**. The password complexity is configurable in the Control Panel > Security Properties pane. By default, the password must:
- Contain at least six characters, but not more than 12 characters.
 - Contain at least two alphabetic characters (A–Z, a–z). Of the alphabetic characters, at least one must be uppercase and one must be lowercase.
 - Contain at least one numeric character (0–9).
 - Contain at least one special character (+ # % , . ; & !). The default special character set is TL1+UNIX.
 - Allow a special character as the first or last character.
 - Allow a numeric character as the first or last character.
 - Not contain the username or any circular shift of the username. An uppercase letter and its corresponding lowercase letter are considered equivalent. For example, if the username is Arthur, the password cannot contain the string arthur, rthura, thurar, hurart, urarth, or rarthu.
 - Differ from the old password by at least three characters. For example, if the old password is MikeBrady5!, the new password cannot be mikebrady5% because only the last character is different. However, the new password MikeBrady2!99 is acceptable because it differs from MikeBrady5! by three characters.
- Step 5** Change the password; then, click **OK**.
- Step 6** Click **OK** in the login advisory dialog box.
- Step 7** If your CTM client software version is older than the CTM server software version, you are prompted with the following dialog box:

CTM client needs to be upgraded for proper operation. Do you want to start the upgrade now? Selecting "No" will exit the application.

Click **Yes**. The CTM server automatically upgrades your CTM client to the newer version. Click **OK** at the "Proceeding with upgrade" prompt and follow the prompts to install the newer client version.



Note The default SysAdmin user has limited privileges. Create new CTM users with SuperUser privileges to have access to all CTM operations. See the [Cisco Transport Manager Release 8.0 User Guide](#) for information about user profiles and creating CTM users.

5.6 Starting Cisco Edge Craft in Sun Solaris

- Step 1** Depending on the option you chose during installation, execute the link that you specified, or enter the following command:

```
/opt/CiscoTransportManagerClient/CiscoEdgeCraft/bin/CiscoEdgeCraft
```

- Step 2** At the Cisco Edge Craft login screen, complete the following substeps:
- a. Enter the community string. The community string represents the NE password, which is set in the NE flash memory by using the CLI.
 - b. Enter the IP address of the NE that you want to connect to.
 - c. Click **Logon**.
-



APPENDIX **A**

Understanding Installation Error Messages

A.1 CTM Client Installation Error Messages

The following table lists the error messages that you might encounter during the CTM client installation and recommends solutions.

Table A-1 Client Installation Error Messages

Error Message	Recommended Action
EID-1: Enter the destination directory.	Specify the destination location.
EID-2: Physical memory on your machine is less than 256 MB; Cisco Transport Manager might not perform as expected.	Upgrade the system RAM to 256 MB or install the software on another workstation.
EID-3: Please select either desktop menu or Shortcut menu or both to proceed.	Specify whether you want to create a CTM desktop icon, a CTM shortcut in the Start menu, or both.
EID-24: Not enough space in the selected disk drive. Please choose a different disk drive.	Choose a disk drive that has enough space.
EID-26: Error occurred while extracting the files. Please check disk space and reinstall.	Verify that the system has enough disk space; then, reinstall the CTM client.
Warning: The installation will write over an existing installation. Press "Previous" if you want to change the install folder.	Click Previous and select a new installation location.
Error: The installation of Cisco Edge Craft will overwrite the CTM client installation.	Click Previous and select a new installation location.

A.2 CTM Server Installation Error Messages

The following table lists the error messages that you might encounter during the CTM server installation and recommends solutions.

Table A-2 Server Installation Error Messages

Error Message	Recommended Action
EID-26: Enter a directory for the CTM Index tablespace.	Enter the directory name.
EID-27: Enter a directory for the CTM Data1 tablespace.	Enter the directory name.

Table A-2 Server Installation Error Messages (continued)

Error Message	Recommended Action
EID-28: Enter a directory for the CTM Data2 tablespace.	Enter the directory name.
EID-29: Enter the database administrator name.	Enter the database administrator name.
EID-30: Enter the database administrator password.	Enter the database administrator password.
EID-31: Enter the database file size in MB.	Enter the database file size.
EID-32: Enter a valid number for the database file size.	Enter the database file size.
EID-33: Enter the data file path.	Enter the data file path.
EID-35: The installation directory is not specified.	Specify the installation directory.
EID-36: I/O exception occurred while writing to the USER.DAT file.	Check file permissions and disk space.
EID-38: Error occurred while removing the USER.DAT file.	Check file permissions.
EID-43: Select at least one option to proceed.	Select at least one option.
EID-44: IP address and username must be specified.	Enter the IP address and username.
EID-45: Username and password are mandatory.	Enter the username and password.
EID-46: IP address or hostname is mandatory.	Enter the IP address or hostname.
EID-47: The installation directory must be specified.	Enter the installation directory.
EID-48: The IP address must be specified.	Enter the IP address.
EID-49: Hostname and password must be specified.	Enter the hostname and password.
EID-50: Hostname could not be located. Specify the correct name or IP address.	Enter the hostname or IP address.
EID-51: Both hostnames and the password must be specified.	Enter the hostname(s) and password.
EID-52: Source hostname could not be located. Specify the correct name or IP address.	Enter the source hostname or IP address.
EID-53: Destination hostname could not be located. Specify the correct name or IP address.	Enter the destination hostname or IP address.
EID-54: The hostname translates to multiple IP addresses. Specify one physical IP address.	Enter the IP address.
EID-100: Invalid SID. The SID is null or contains spaces. Enter an SID that is not null and does not contain spaces.	Enter a valid system ID (SID).
EID-101: The CTM GateWay/CORBA installation failed. The CTM database might be down or not installed. Start the CTM database or install it. Then, retry the CTM GateWay/CORBA installation.	<ol style="list-style-type: none"> 1. Start or install the CTM database. 2. When the server and database are installed on separate workstations (and before you install CTM GateWay/CORBA on the server workstation), you must manually update the oratab file on the server for the Oracle SID of the remote database server. The oratab file is located in the /var/opt/oracle/ directory. 3. Retry the CTM GateWay/CORBA installation.
EID-382: The CTM server is initializing. Please try again after some time.	Wait for several minutes for the server to finish initializing.



APPENDIX **B**

Uninstalling CTM, Cisco Edge Craft, and the Oracle Database

This appendix describes how to uninstall the CTM R8.0 server, the CTM R8.0 client, Cisco Edge Craft, and the Oracle software. This appendix also describes how to delete the EMS information from the Oracle database.

B.1 Deleting the Oracle Database

Step 1 Log in as the root user on the server where the Oracle database is installed.

Step 2 Enter the following commands:

```
cd /opt/CiscoTransportManagerServer/bin
./delete_old_db.sh <ORACLE_SID>
```

B.2 Uninstalling the CTM Server



Note Before uninstalling the CTM server, use the **ctms-stop** command to shut down the server.



Note Uninstalling the CTM server automatically uninstalls the web server (if the web server was installed). The web server cannot be uninstalled on its own.

Step 1 Enter the following command to set the display on your terminal:

```
setenv DISPLAY <hostname_or_IP_address>:0.0
```

Step 2 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
<hostname_or_IP_address>:0.0
```

Step 3 Log into the CTM server as the root user and enter the following command, where *<version>* is the specific version of the CTM server that you want to uninstall:

```
/opt/CiscoTransportManagerServer<version>/UninstallerData/IAUninstaller.sh
```

For example, enter the following command to uninstall CTM R8.0:

```
/opt/CiscoTransportManagerServer8.0/UninstallerData/IAUninstaller.sh
```

Step 4 Wait for up to 60 seconds while the following message appears:

```
Uninstalling Cisco Transport Manager server...
```

Step 5 At the Uninstall Cisco Transport Manager screen, click **Uninstall**.



Note If the CTM server is still running, you are prompted with an error dialog box. To stop the uninstallation process, click **OK**. Use either the **ctms-stop** or **ctms-abort** command to stop the CTM server. The uninstall process will proceed once the CTM server is no longer running.

Step 6 At the Uninstall Complete screen, click **Quit**.

B.3 Uninstalling the CTM Client and Cisco Edge Craft on Microsoft Windows

Step 1 On the workstation where the client will be uninstalled, close any CTM client sessions and Cisco Edge Craft client sessions that are currently open.

Step 2 Use the Windows Add/Remove Programs tool to uninstall the CTM client.

- a. Choose **Start > Settings > Control Panel > Add/Remove Programs**.
- b. In the Add/Remove Programs dialog box, choose **Cisco Transport Manager Client** and click **Change/Remove**.
- c. At the Uninstall Cisco Transport Manager Client screen, click **Uninstall**.



Note If you are prompted to close any CTM client sessions that are currently open, click **OK**.

- d. At the Uninstall Complete screen, click **Done**.
- e. Close the Add/Remove Programs dialog box.

Step 3 Delete the directory where the CTM client was installed. The default installation directory is C:\Cisco\TransportManagerClient8_0.

B.4 Uninstalling the CTM Client and Cisco Edge Craft on Sun Solaris

**Note**

If any reports or exports of CTM data have been stored under the client directory and need to be saved, move the reports to a different directory before uninstalling the CTM client.

Step 1 On the workstation where the client will be uninstalled, close any CTM client sessions that are currently open.

Step 2 Log in as the root user or become the root user on the workstation where the client will be uninstalled.

Step 3 Enter the following command to change directories to the /opt directory:

```
cd /opt
```

Step 4 Enter the following command to remove the /opt/CiscoTransportManagerClient directory:

```
rm -rf CiscoTransportManagerClient
```

If at the time of installation you specified a directory other than the default /opt/CiscoTransportManagerClient directory, enter the following command, specifying the full path (for example, /opt/CiscoTransportManagerClient8.0):

```
rm -rf <full_path_to_installation_directory>
```

Step 5 Enter the following command to remove the symbolic link to ctmc-start:

```
rm /usr/bin/ctmc-start
```

**Caution**

In the Bourne shell, if you enter **ctmc-start** to start the client and then execute **Ctrl+C** in the xterm window where the client was launched, the CTM client will terminate.

B.5 Uninstalling the Oracle9i Software

**Caution**

If you remove the Oracle9i software, you cannot use CTM R8.0. Be sure that you want to remove the Oracle9i software before completing the following steps.

Step 1 Log into the Oracle database workstation as the root user and enter the following commands:

```
rm -rf /oraclesw9i/product/9.2  
rm -rf /var/opt/oracle/oraInst.loc
```

Step 2 Log into the CTM server workstation as the root user and enter the same commands:

```
rm -rf /oraclesw9i/product/9.2  
rm -rf /var/opt/oracle/oraInst.loc
```

B.6 Reverting to the Previous Database

To revert to the previous database prior to the upgrade to CTM R8.0, see the *Cisco Transport Manager Release 8.0 User Guide*, which is available online at http://www.cisco.com/en/US/products/sw/opticsw/ps2204/products_user_guide_list.html. Refer to the section “Restoring the CTM Database from the Previous Backup.”

**Note**

The revert procedure will result in loss of local database information stored after the upgrade. In other words, a reverse database migration is not supported; rather, a backup copy of the original database is used.




APPENDIX **C**

Mounting and Unmounting CDs on Sun Solaris

This appendix describes how to mount and unmount CD-ROMs on a Solaris system. It includes general information only. For more detailed instructions, consult your Sun documentation.

C.1 Mounting a Local CD-ROM Drive

To mount a local CD-ROM drive, insert the CD-ROM into the drive and complete the following steps:

-
- Step 1** Become the superuser by entering the **su** command and the root password at the command prompt, or log in as the root user. The command prompt changes to the pound sign (#).
- Step 2** If the `/cdrom` directory does not already exist, enter the following command to create it:
- ```
mkdir /cdrom
```
- Step 3** Mount the CD-ROM drive.
-  **Note** The `vold` process manages the CD-ROM device and performs the mounting. The CD-ROM might automatically mount onto the `/cdrom/cdrom0` directory.
- 
- Step 4** If you are running File Manager, a separate File Manager window displays the contents of the CD-ROM. From the File Manager, double-click the **setup.sh** file. The Action: Run dialog box appears. Click **OK** to continue the installation.
- Step 5** If the `/cdrom/cdrom0` directory is empty because the CD-ROM was not mounted, or if the File Manager does not open a window displaying the contents of the CD-ROM, enter the following command to verify that the `vold` daemon is running:
- ```
ps -ef | grep vold | grep -v grep
```
- Step 6** If `vold` is running, the system displays the process identification number of `vold`. If the system does not display anything, enter the following command to restart the daemon:
- ```
/usr/sbin/vold &
```
- Step 7** If the `vold` daemon is running but did not mount the CD-ROM, stop the `vold` daemon and then restart it. To stop the `vold` process, you must know the process identification number. If you do not know the process identification number, enter the following command to obtain it:
- ```
ps -ef | grep vold | grep -v grep
```
- Step 8** Enter the following command to stop the `vold` process:

```
kill -15 <process_ID_number>
```

Step 9 Enter the following command to restart the vold process:

```
/usr/sbin/vold &
```

Step 10 If you have problems using the vold daemon, enter the following command to mount the CD-ROM:

```
mount -F hsfs -r ro /dev/dsk/cxydz /cdrom/cdrom0
```

where *x* is the CD-ROM drive controller number, *y* is the CD-ROM drive Small Computer System Interface (SCSI) ID number, and *z* is the slice of the partition on which the CD-ROM is located.

C.2 Mounting a Remote CD-ROM Drive

Insert the CD-ROM into the CD-ROM drive of the remote workstation and perform Steps 1 through 12 only on the remote workstation. Then, perform Steps 13 through 16 on the workstation where you want to install the application.

Step 1 Log in as the root user. The command prompt changes to the pound sign (#).

Step 2 If the /cdrom directory does not already exist, enter the following command to create it:

```
mkdir /cdrom
```

Step 3 Mount the CD-ROM drive.



Note The vold daemon process manages the CD-ROM device and performs the mounting. The CD-ROM might automatically mount onto the /cdrom/cdrom0 directory.

Step 4 If you are running File Manager, a separate File Manager window displays the contents of the CD-ROM. From the File Manager, double-click the **setup.sh** file. The Action: Run dialog box appears. Click **OK** to continue the installation.

Step 5 If the /cdrom/cdrom0 directory is empty because the CD-ROM was not mounted, or if the File Manager does not open a window displaying the contents of the CD-ROM, enter the following command to verify that the vold daemon is running:

```
ps -ef | grep vold | grep -v grep
```

Step 6 If vold is running, the system displays /usr/sbin/vold. If the system does not display anything, enter the following command to restart the daemon:

```
/usr/sbin/vold &
```

Step 7 If the vold daemon is running but did not mount the CD-ROM, stop the vold daemon and then restart it. To stop the vold process, you must know the process identification number. If you do not know the process identification number, enter the following command to obtain it:

```
ps -ef | grep vold | grep -v grep
```

Step 8 Enter the following command to stop the vold process:

```
kill -15 <process_ID_number>
```

Step 9 Enter the following command to restart the vold process:

```
/usr/sbin/vold &
```

Step 10 If you have problems using the vold daemon, enter the following command to mount the CD-ROM:

```
mount -F hfs -r ro /dev/dsk/cxydz /cdrom/cdrom0
```

where *x* is the CD-ROM drive controller number, *y* is the CD-ROM drive SCSI ID number, and *z* is the slice of the partition on which the CD-ROM is located.

Step 11 Use a text editor to create an /etc/dfs/dfstab file, if one does not already exist.

Step 12 Add the following line to the /etc/dfs/dfstab file:

```
share -F nfs -o ro /cdrom/cdrom0
```

Step 13 Enter the following command to verify that your remote workstation is enabled as a Network File System (NFS) server:

```
ps -ef | grep nfs | grep -v grep
```

The output of this command shows whether or not the /usr/lib/nfs/nfsd and /usr/lib/nfs/mountd daemons are running. If they are not running, enter the following command to enable your workstation as an NFS server:

```
/etc/init.d/nfs.server start
```

If your workstation is enabled as an NFS server, enter the **share** or **shareall** command.

Step 14 Go to the workstation where you want to install the application.

Step 15 Log in as the superuser by entering the **su** command and the root password, or log in as the root user.

Step 16 Enter the following command to create a /cdrom directory, if one does not already exist:

```
mkdir -p /cdrom/<directory_name>
```

Step 17 Enter the following command to mount the CD-ROM drive:

```
/usr/sbin/mount -r <remote_workstation_name>:/cdrom/cdrom0 /cdrom/<directory_name>
```

C.3 Unmounting a Local CD-ROM Drive

Step 1 As the root user, enter the following commands:

```
cd
umount /cdrom/cdrom0
eject
```

Step 2 Remove the CD-ROM and store it in a safe place.

C.4 Unmounting a Remote CD-ROM Drive

Step 1 As the root user, enter the following command on the local workstation:

```
umount /cdrom/<directory_name>
```

Step 2 As the root user, enter the following command on the remote workstation:

```
umount /cdrom/cdrom0
```

Step 3 Remove the CD-ROM and store it in a safe place.



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